Safety notices

This manual contains information that you should observe to ensure your own personal safety and prevent material damage. The notices referring to your personal safety are highlighted in the manual by a warning triangle; notices that relate to material damage only have no warning triangle. The notices shown below are graded according to the level of hazard (from most to least hazardous):

Danger
Indicates that death or serious injury will result if proper precautions are not taken.

Warning
Indicates that death or serious injury may result if proper precautions are not taken.

Caution
With a warning triangle, indicates that minor injury may result if proper precautions are not taken.

Caution
Without a warning triangle, indicates that material damage may result if proper precautions are not taken.

Notice
Indicates that an undesirable result or state may occur if the corresponding instructions are not observed.

If more than one level of danger is simultaneously applicable, the warning notice for the highest level is used. A warning notice with a warning triangle indicating possible personal injury may also include a warning relating to material damage.

Qualified Personnel

The associated device/system may only be installed and operated in conjunction with this documentation. The device/system may only be commissioned and operated by qualified personnel. For the purpose of the safety notices in this documentation, “qualified personnel” are those authorized to commission, ground, and label equipment, systems, and circuits in accordance with established safety procedures.

Proper Use of Siemens Products

Please observe the following:

Warning
Siemens products are only permitted to be used for the applications specified in the catalog and in the associated technical documentation. If third-party products and components are to be used, they must be recommended or approved by Siemens. To ensure proper and safe operation of these products, they must be correctly transported, stored, set up, mounted, installed, commissioned, operated, and maintained. The permissible ambient conditions must be met. Information in the associated documentation must be observed.

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Industry Sector
Postfach 4848
90327 NÜRNBERG
GERMANY

Liability Disclaimer

We have checked that the contents of this document correspond to the hardware and software described. Nevertheless, we cannot assume responsibility for any deviations that may arise. The data in this document is regularly checked and any necessary corrections included in subsequent editions.

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Preface

SINAMICS documentation

The SINAMICS documentation is organized in the following categories:

- General documentation/catalogs
- Manufacturer/service documentation

More information

Information on the following topics is available under the link:

- Ordering documentation/overview of documentation
- Additional links to download documents
- Using documentation online (find and search in manuals/information).

http://www.siemens.com/motioncontrol/docu

My Documentation Manager

Information on how to produce individual contents for your own machine documentation based on Siemens contents is available under the link:

http://www.siemens.com/mdm

Training

Information about SITRAIN (Siemens Training on products, systems and solutions for automation) is available under the following link:

http://www.siemens.com/sitrain

FAQs

You can find Frequently Asked Questions in the Service&Support pages under Product Support:

http://support.automation.siemens.com

SINAMICS

You can find information on SINAMICS at:

http://www.siemens.com/sinamics
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<th>Tools/documents</th>
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<tr>
<td></td>
<td>• SINAMICS G130 Operating Instructions</td>
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<tr>
<td>Usage/operation</td>
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<tr>
<td></td>
<td>• SINAMICS G130 Operating Instructions</td>
</tr>
<tr>
<td>Maintenance/servicing</td>
<td>• SINAMICS G150 Operating Instructions</td>
</tr>
<tr>
<td></td>
<td>• SINAMICS G130 Operating Instructions</td>
</tr>
</tbody>
</table>

Target group

This documentation is aimed at machine manufacturers, commissioning engineers, and service personnel who use SINAMICS.

Benefits

This documentation contains the comprehensive information about parameters, function diagrams and faults and alarms required to commission and service the system.

This manual should be used in addition to the other manuals and tools provided for the product.
Standard scope

The scope of the functionality described in this document can differ from the scope of the functionality of the drive system that is actually supplied.

- Other functions not described in this documentation might be able to be executed in the drive system. This does not, however, represent an obligation to supply functions of this kind when new equipment is delivered or during servicing.
- The documentation can also contain descriptions of functions that are not available in a particular product version of the drive system. The functionalities of the supplied drive system should only be taken from the ordering documentation.
- Extensions or changes made by the machine manufacturer must be documented by the machine manufacturer.

For reasons of clarity, this documentation does not contain all of the detailed information on all of the product types. This documentation cannot take into consideration every conceivable type of installation, operation and service/maintenance.

Search tools

The following guides are provided to help you locate information in this manual:

1. Table of contents
   - General table of contents for the complete manual (after the preface).
   - Table of contents for function diagrams (Section 2.1).
2. List of abbreviations
3. List of references
4. Index

Technical Support

Country-specific telephone numbers for technical support are provided on the Internet at:

http://www.siemens.com/automation/service&support
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# Parameters

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<tr>
<td>1.4 Parameters for write protection and know-how protection</td>
<td>1-967</td>
</tr>
</tbody>
</table>
1.1 Overview of parameters

1.1.1 Explanation of parameter list

Basic structure of parameter descriptions

The data in the following example has been chosen at random. The table below contains all the information that can be included in a parameter description. Some of the information is optional.

The parameter list (See Section 1.2) is structured as follows:

--- Start of example ---

<table>
<thead>
<tr>
<th>Drive object (function module)</th>
<th>BICO: Long parameter name / short parameter name</th>
<th>Calculated: CALC_MOD_REG</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C1(x), C2(x), U, T</td>
<td>Unsigned32/Integer16</td>
<td>Dynamic index: CDS, p0170</td>
<td>Function diagram: 2080</td>
</tr>
<tr>
<td>Data type: Closed-loop control</td>
<td>Unit group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: FEM</td>
<td>Scaling: p2000</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>10.00 [Nm]</td>
<td>0.00 [Arms]</td>
<td></td>
</tr>
</tbody>
</table>

| Description: | Text |
| Values: | Name and meaning of value 0 |
| 0: | Name and meaning of value 0 |
| 1: | Name and meaning of value 1 |
| 2: | Name and meaning of value 2 |
| etc.: | |

| Recommendation: | Text |
| Index: | Name and meaning of index 0 |
| [0] | Name and meaning of index 1 |
| [1] | Name and meaning of index 2 |
| etc.: | |

<table>
<thead>
<tr>
<th>Bit array:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Name and meaning of bit 0</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Name and meaning of bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Name and meaning of bit 2</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
<tr>
<td>etc.:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Dependency: | Text |
| See also: pxxxx, xxxx |
| See also: Fxxxxx, Axxxxx |

<table>
<thead>
<tr>
<th>Danger:</th>
<th>Warning:</th>
<th>Caution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety notices with a warning triangle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Caution:</th>
<th>Notice:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety notices without a warning triangle</td>
<td></td>
</tr>
</tbody>
</table>

| Note: | Information which might be useful. |

--- End of example ---
### Parameter number

The parameter number is made up of a "p" or "r", followed by the parameter number and the index (optional).

Examples of representation in the parameter list:

- **p...**  Adjustable parameter (read and write parameter)
- **r...**  Display parameter (read-only)
- **p0918**  Adjustable parameter 918
- **p0099[0...3]**  Adjustable parameter 99, indices 0 to 3
- **p1001[0...n]**  Adjustable parameter 1001, indices 0 to n (n = configurable)
- **r0944**  Display parameter 944

Other examples of the notation used in the documentation:

- **p1070[1]**  Adjustable parameter 1070, index 1
- **p2098[1].3**  Adjustable parameter 2098, index 1 bit 3
- **r0945[2](3)**  Display parameter 945, index 2 of drive object 3
- **p0795.4**  Adjustable parameter 795, bit 4
- **r2129.0...15**  Display parameter 2129 with bit array (maximum 16 bits)

The following applies to adjustable parameters:

The parameter value as delivered is specified under "Factory setting" with the relevant unit in square brackets. The value can be adjusted within the range defined by "Min" and "Max".

The term "linked parameterization" is used in cases where changes to adjustable parameters affect the settings of other parameters.

Linked parameterization can occur, for example, as a result of the following actions or parameters:

- Execute macros
  - p0015, p0700, p1000, p1500
- Set PROFIBUS telegram (BICO interconnections)
  - p0922
- Set component lists
  - p0230, p0300, p0301, p0400
- Automatic calculation and pre-assignment
  - p0112, p0340, p0578, p3900
- Restore factory settings
  - p0970

The following applies to display parameters:

The fields "Min", "Max" and "Factory setting" are specified with a dash "-" and the relevant unit in square brackets.
Parameters

Overview of parameters

Note:
The parameter list can contain parameters that are not visible in the expert lists of the respective commissioning software (e.g. parameters for trace functions).

BICO: Long parameter name / short parameter name

The following abbreviations can appear in front of the parameter name:

- **BI**: Binector Input
  This parameter is used for selecting the source of a digital signal.

- **BO**: Binector Output
  This parameter is available as a digital signal for interconnection with other parameters.

- **CI**: Connector Input
  This parameter is used for selecting the source of an "analog" signal.

- **CO**: Connector Output
  This parameter is available as an "analog" signal for interconnection with other parameters.

- **CO/BO**: Connector/Binector Output
  This parameter is available as an "analog" and digital signal for interconnection with other parameters.

Note:
A connector input (CI) cannot be just interconnected with any connector output (CO, signal source).
When interconnecting a connector input using the commissioning software, only the corresponding possible signal sources are listed.
Drive object (function module)

A drive object (DO) is an independent, "self-contained" functional unit that has its own parameters and, in some cases, faults and alarms.

When carrying out commissioning using the commissioning software, you can select/deselect additional functions and their parameters by activating/deactivating function modules accordingly.

The parameter list specifies the associated drive object and function module for each individual parameter.

Examples:

- p1070 CI: Main setpoint
  VECTOR
  The parameter is only available with the VECTOR drive object, regardless of which function modules have been activated.

- p1055 BI: Jog bit 0
  VECTOR
  The parameter is available with the VECTOR drive object, regardless of which function modules have been activated (i.e. it is available with every activated function module belonging to the drive object).

A parameter can belong to one, several or all drive objects.

The following information relating to "Drive object" and "Function module" can be displayed under the parameter number:

<table>
<thead>
<tr>
<th>Drive object (function module)</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>-</td>
<td>All drive objects have this parameter.</td>
</tr>
<tr>
<td>B_INF</td>
<td>30</td>
<td>Basic Infeed Control Unregulated line infeed unit (without feedback) for rectifying the line voltage of the DC link</td>
</tr>
<tr>
<td>B_INF (parallel)</td>
<td>-</td>
<td>Basic Infeed with &quot;Parallel connection&quot; function module (r0108.15).</td>
</tr>
<tr>
<td>B_INF (brk mod ext)</td>
<td>-</td>
<td>Basic Infeed with &quot;Braking Module External&quot; function module (r0108.26).</td>
</tr>
<tr>
<td>B_INF (cooling unit)</td>
<td>-</td>
<td>Basic Infeed with &quot;Cooling unit&quot; function module (r0108.28)</td>
</tr>
<tr>
<td>B_INF (PROFINET)</td>
<td>-</td>
<td>Basic Infeed with &quot;PROFINET&quot; function module (r0108.31).</td>
</tr>
<tr>
<td>CU_G130_DP</td>
<td></td>
<td>Control Unit SINAMICS G130 with PROFIBUS interface.</td>
</tr>
<tr>
<td>CU_G130_DP (CAN)</td>
<td>-</td>
<td>Control Unit SINAMICS G130 with PROFIBUS interface and function module &quot;CAN&quot; (p0108.29).</td>
</tr>
<tr>
<td>CU_G130_DP (COMM BOARD)</td>
<td></td>
<td>Control Unit SINAMICS G130 with PROFIBUS interface and &quot;COMM board&quot; function module (p0108.30 ).</td>
</tr>
<tr>
<td>CU_G130_DP (PROFINET)</td>
<td>-</td>
<td>Control Unit SINAMICS G130 with PROFIBUS interface and function module &quot;PROFINET&quot; (p0108.31).</td>
</tr>
<tr>
<td>CU_G130_PN</td>
<td></td>
<td>Control Unit SINAMICS G130 with PROFINET interface.</td>
</tr>
</tbody>
</table>
Table 1-1  Data in the "Drive object (function module)" field, continued

<table>
<thead>
<tr>
<th>Drive object (function module)</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN (CAN)</td>
<td>-</td>
<td>Control Unit SINAMICS G130 with PROFINET interface and function module “CAN” (p0108.29).</td>
</tr>
<tr>
<td>CU_G130_PN (COMM BOARD)</td>
<td></td>
<td>Control Unit SINAMICS G130 with PROFINET interface and “COMM board” function module (p0108.30).</td>
</tr>
<tr>
<td>CU_G130_PN (PROFINET)</td>
<td>-</td>
<td>Control Unit SINAMICS G130 with PROFINET interface and function module “PROFINET” (p0108.31).</td>
</tr>
<tr>
<td>CU_G150_DP</td>
<td></td>
<td>Control Unit SINAMICS G150 with PROFIBUS interface.</td>
</tr>
<tr>
<td>CU_G150_DP (CAN)</td>
<td>-</td>
<td>Control Unit SINAMICS G150 with PROFIBUS interface and function module “CAN” (p0108.29).</td>
</tr>
<tr>
<td>CU_G150_DP (COMM BOARD)</td>
<td></td>
<td>Control Unit SINAMICS G150 with PROFIBUS interface and “COMM board” function module (p0108.30).</td>
</tr>
<tr>
<td>CU_G150_DP (PROFINET)</td>
<td>-</td>
<td>Control Unit SINAMICS G150 with PROFIBUS interface and function module “PROFINET” (p0108.31).</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td>Control Unit SINAMICS G150 with PROFINET interface.</td>
</tr>
<tr>
<td>CU_G150_PN (CAN)</td>
<td>-</td>
<td>Control Unit SINAMICS G150 with PROFINET interface and function module “CAN” (p0108.29).</td>
</tr>
<tr>
<td>CU_G150_PN (COMM BOARD)</td>
<td></td>
<td>Control Unit SINAMICS G150 with PROFINET interface and “COMM board” function module (p0108.30).</td>
</tr>
<tr>
<td>CU_G150_PN (PROFINET)</td>
<td>-</td>
<td>Control Unit SINAMICS G150 with PROFINET interface and function module “PROFINET” (p0108.31).</td>
</tr>
<tr>
<td>ENC</td>
<td>300</td>
<td>Object for a DRIVE-CLiQ encoder.</td>
</tr>
<tr>
<td>HUB</td>
<td>150</td>
<td>DRIVE-CLiQ Hub Module.</td>
</tr>
<tr>
<td>TB30</td>
<td>100</td>
<td>Terminal Board 30.</td>
</tr>
<tr>
<td>TM150</td>
<td>208</td>
<td>Terminal Module 150.</td>
</tr>
<tr>
<td>TM31</td>
<td>200</td>
<td>Terminal Module 31.</td>
</tr>
<tr>
<td>TM54F_MA</td>
<td>205</td>
<td>Terminal Module 54F Master.</td>
</tr>
<tr>
<td>TM54F_SL</td>
<td>206</td>
<td>Terminal Module 54F Slave.</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>12</td>
<td>Vector drive for SINAMICS G130/G150.</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with “Speed/torque control” function module (r0108.2).</td>
</tr>
<tr>
<td>VECTOR_G (Safety red)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Safety rotary axis&quot; function module (r0108.13).</td>
</tr>
<tr>
<td>VECTOR_G (ext. brake)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Extended brake control&quot; function module (r0108.14).</td>
</tr>
<tr>
<td>VECTOR_G (parallel)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Parallel connection&quot; function module (r0108.15).</td>
</tr>
<tr>
<td>VECTOR_G (Tech_ctrl)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Technology controller&quot; function module (r0108.16).</td>
</tr>
<tr>
<td>VECTOR (ext. mess.)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Extended messages/monitoring functions&quot; function module (r0108.17).</td>
</tr>
</tbody>
</table>
### Table 1-1  Data in the "Drive object (function module)" field, continued

<table>
<thead>
<tr>
<th>Drive object (function module)</th>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (cooling unit)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;Cooling unit&quot; function module (r0108.28).</td>
</tr>
<tr>
<td>VECTOR_G (CAN)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;CAN&quot; function module (r0108.29).</td>
</tr>
<tr>
<td>VECTOR_G (PROFINET)</td>
<td>-</td>
<td>Vector drive for SINAMICS G130/G150 with &quot;PROFINET&quot; function module (r0108.31).</td>
</tr>
</tbody>
</table>

**Note:**

The drive object type is used to identify the drive objects in the drive system (e.g. r0107, r0975[1]).
Can be changed

The "-" sign indicates that the parameter can be changed in any object state and that the change will be effective immediately.

The information "C1(x), C2(x), T, U" ((x): optional) means that the parameter can be changed only in the specified drive object state and that the change will not take effect until the object switches to another state. One or more states are possible.

The following states may be specified:

- **C1(x) Device commissioning**
  - **C1: Commissioning 1**
  - Device commissioning is in progress (p0009 > 0).
  - Pulses cannot be enabled.
  - The parameter can only be changed when the device commissioning settings (p0009 > 0) are as follows:
    - C1: Can be changed for all settings p0009 > 0.
    - C1(x): Can only be changed when the settings are p0009 = x
  - A modified parameter value does not take effect until device commissioning mode is exited with p0009 = 0.

- **C2(x) Drive object commissioning**
  - **C2: Commissioning 2**
  - Drive commissioning is in progress (p0009 = 0 and p0010 > 0).
  - Pulses cannot be enabled.
  - The parameter can only be changed when the drive commissioning settings (p0010 > 0) are as follows:
    - C2: Can be changed for all settings p0010 > 0
    - C2(x): Can only be changed when the settings are p0010 = x
  - A modified parameter value does not take effect until drive commissioning mode is exited with p0010 = 0.

- **U Operation**
  - **U: Run**
  - Pulses are enabled.

- **T Ready for operation**
  - **T: Ready to run**
  - The pulses are not enabled and the status "C1(x)" or "C2(x)" is not active.

**Note:**

Parameter p0009 is CU-specific (available on the Control Unit).

Parameter p0010 is drive-specific (available for each drive object).

The operating state of individual drive objects is displayed in r0002.
Calculated

Specifies whether the parameter is influenced by automatic calculations. The calculation attribute defines which activities influence the parameter. The following attributes apply:

- **CALC_MOD_ALL**
  - p0340 = 1
  - Project download with commissioning software and send from p0340 = 3
- **CALC_MOD_CON**
  - p0340 = 1, 3, 4
- **CALC_MOD_EQU**
  - p0340 = 1, 2
- **CALC_MOD_LIM_REF**
  - p0340 = 1, 3, 5
  - p0578 = 1
- **CALC_MOD_REG**
  - p0340 = 1, 3

**Note:**
For p3900 > 0, p0340 = 1 is also called automatically.
After p1910 = 1, p0340 = 3 is also called automatically.

Access level

Specifies the access level required to be able to display and change the relevant parameter. The required access level can be set using p0003. The system uses the following access levels:

- 1: Standard
- 2: Extended
- 3: Expert
- 4: Service
  Parameters with this access level are password protected.

**Note:**
Parameter p0003 is CU-specific (available on the Control Unit).
**Data type**

The information on the data type can consist of the following two items (separated by a slash):

- **First item**
  Data type of the parameter.
- **Second item (for binector or connector input only)**
  Data type of the signal source to be interconnected (binector/connector output).

Parameters can have the following data types:

- **I8** Integer8 8-bit integer
- **I16** Integer16 16-bit integer
- **I32** Integer32 32-bit integer
- **U8** Unsigned8 8 bits without sign
- **U16** Unsigned16 16 bits without sign
- **U32** Unsigned32 32 bits without sign
- **Float** FloatingPoint32 32-bit floating-point number

Depending on the data type of the BICO input parameter (signal sink) and BICO output parameter (signal source), the following combinations are possible when BICO interconnections are established:

<table>
<thead>
<tr>
<th>BICO input parameter</th>
<th>CI parameter</th>
<th>BI parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unssigned32/Integer16</td>
<td>Unssigned32/Integer32</td>
</tr>
<tr>
<td>CO: Unsigned8</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: Unsigned16</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: Integer16</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: Unsigned32</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: Integer32</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>CO: FloatingPoint32</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>BO: Unsigned8</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>BO: Unsigned16</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Legend:  
- x: BICO interconnection permitted  
- -: BICO interconnection not permitted  

\(^1\) Exception:

BICO input parameters with data type "Unsigned32/FloatingPoint32" can also be interconnected with the following BICO output parameters, although these are not of the "FloatingPoint32" data type:

- CO: r8850, CO: r8860, CO: r2050, CO: r2060
Dynamic index

For parameters with a dynamic index [0…n], the following information is specified here:

- Data set (if available).
- Parameter for the number of indices (n = number - 1).

This field can contain the following information:

- "CDS, p0170" (Command Data Set, CDS count)
  
  Example:
  
  p1070[0] → main setpoint [command data set 0]
  p1070[1] → main setpoint [command data set 1], etc.

- "DDS, p0180" (Drive Data Set, DDS count)
- "EDS, p0140" (Encoder Data Set, EDS count)
- "MDS, p0130" (Motor Data Set, MDS count)
- "PDS, p0120" (Power unit Data Set, PDS count)
- "p2615" (traversing blocks count)
Parameters

Overview of parameters

Function diagram

The parameter is included in this function diagram. The structure of the parameter function and its relationship with other parameters is shown in the specified function diagram.

Example:

Function diagram: 3060.3  3060: Function diagram number
3: Signal path (optional)

P group (refers only to access via BOP (Basic Operator Panel))

Specifies the functional group to which the parameter belongs. The required parameter group can be set via p0004.

Note:

Parameter p0004 is CU-specific (available on the Control Unit).

Unit, unit group, and unit selection

The standard unit of a parameter is specified in square brackets after the values for "Min", "Max", and "Factory setting".

For parameters where the unit can be switched, the specifications for "Unit group" and "Unit selection" determine the group to which this parameter belongs and with which parameter the unit can be switched over.

Example:

Unit group: 7_1, unit selection: p0505

The parameter belongs to unit group 7_1 and the unit can be switched over using p0505.

All the potential unit groups and possible unit selections are listed below.

Table 1-3 Unit groups (p0100)

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0100 =</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>7_4</td>
<td>Nm</td>
</tr>
<tr>
<td>8_4</td>
<td>N</td>
</tr>
<tr>
<td>14_2</td>
<td>W</td>
</tr>
<tr>
<td>14_6</td>
<td>kW</td>
</tr>
<tr>
<td>25_1</td>
<td>kgm²</td>
</tr>
<tr>
<td>27_1</td>
<td>kg</td>
</tr>
<tr>
<td>28_1</td>
<td>Nm/A</td>
</tr>
<tr>
<td>29_1</td>
<td>N/Arms</td>
</tr>
<tr>
<td>30_1</td>
<td>m</td>
</tr>
</tbody>
</table>
### Parameters

#### Overview of parameters

**Table 1-4 Unit groups (p0349)**

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0349 =</th>
<th>Reference variable at %</th>
</tr>
</thead>
<tbody>
<tr>
<td>15_1</td>
<td>mH %</td>
<td>1000 · p0304 / (2 · π · (\sqrt[3]{\text{p0305}}\ · \text{p0310})</td>
</tr>
<tr>
<td>16_1</td>
<td>Ohm %</td>
<td>p0304 / (\sqrt[3]{\text{p0305}})</td>
</tr>
</tbody>
</table>

**Table 1-5 Unit groups (p0505)**

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0505 =</th>
<th>Reference variable at %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2_1</td>
<td>Hz % Hz % p2000</td>
<td>p2000</td>
</tr>
<tr>
<td>2_2</td>
<td>kHz % kHz % p2000</td>
<td>p2000</td>
</tr>
<tr>
<td>3_1</td>
<td>rpm % rpm % p2000</td>
<td>p2000</td>
</tr>
<tr>
<td>4_1</td>
<td>m/min % ft/min % p2000</td>
<td>p2000</td>
</tr>
<tr>
<td>4_2</td>
<td>m/min m/min ft/min ft/min</td>
<td>-</td>
</tr>
<tr>
<td>5_1</td>
<td>Vrms % Vrms % p2001</td>
<td>p2001</td>
</tr>
<tr>
<td>5_2</td>
<td>V % V % p2001</td>
<td>p2001</td>
</tr>
<tr>
<td>5_3</td>
<td>V % V % p2001</td>
<td>p2001</td>
</tr>
<tr>
<td>6_1</td>
<td>mArms % mArms % p2002</td>
<td>p2002</td>
</tr>
<tr>
<td>6_2</td>
<td>Arms % Arms % p2002</td>
<td>p2002</td>
</tr>
<tr>
<td>6_3</td>
<td>mA % mA % p2002</td>
<td>p2002</td>
</tr>
<tr>
<td>6_4</td>
<td>A % A % p2002</td>
<td>p2002</td>
</tr>
<tr>
<td>6_5</td>
<td>A % A % p2002</td>
<td>p2002</td>
</tr>
<tr>
<td>7_1</td>
<td>Nm % lbf ft % p2003</td>
<td>p2003</td>
</tr>
<tr>
<td>7_2</td>
<td>Nm Nm lbf ft lbf ft</td>
<td>-</td>
</tr>
<tr>
<td>7_3</td>
<td>Nm % lbf ft % 1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>8_1</td>
<td>N % lbf % p2003</td>
<td>p2003</td>
</tr>
<tr>
<td>8_2</td>
<td>N N lbf lbf</td>
<td>-</td>
</tr>
<tr>
<td>8_3</td>
<td>N % lbf % 1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>14_1</td>
<td>W % HP % r2004 (drive)</td>
<td>r2004 (drive)</td>
</tr>
<tr>
<td>14_3</td>
<td>W % HP % r2004 (infeed)</td>
<td>r2004 (infeed)</td>
</tr>
<tr>
<td>14_4</td>
<td>W % HP % r2004 (drive)</td>
<td>r2004 (drive)</td>
</tr>
<tr>
<td>14_5</td>
<td>kW % HP % r2004 (drive)</td>
<td>r2004 (drive)</td>
</tr>
<tr>
<td>14_7</td>
<td>kW % HP % r2004 (infeed)</td>
<td>r2004 (infeed)</td>
</tr>
<tr>
<td>14_8</td>
<td>kW % HP % r2004 (drive)</td>
<td>r2004 (drive)</td>
</tr>
</tbody>
</table>
### Table 1-5  Unit groups (p0505), continued

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0505 = Value</th>
<th>Reference variable at %</th>
</tr>
</thead>
<tbody>
<tr>
<td>14_9</td>
<td>W W HP HP</td>
<td></td>
</tr>
<tr>
<td>14_10</td>
<td>kW kW HP HP</td>
<td></td>
</tr>
<tr>
<td>14_11</td>
<td>var % var %</td>
<td>r2004</td>
</tr>
<tr>
<td>14_12</td>
<td>kvar % kvar %</td>
<td>r2004</td>
</tr>
<tr>
<td>17_1</td>
<td>Nms/rad % lbf ft s/rad %</td>
<td>p2000/p2003</td>
</tr>
<tr>
<td>18_1</td>
<td>V/A % V/A %</td>
<td>p2002/p2001</td>
</tr>
<tr>
<td>19_1</td>
<td>A/V % A/V %</td>
<td>p2001/p2002</td>
</tr>
<tr>
<td>21_1</td>
<td>°C °C °F °F</td>
<td></td>
</tr>
<tr>
<td>21_2</td>
<td>K K °F °F</td>
<td></td>
</tr>
<tr>
<td>22_1</td>
<td>m/s² m/s² ft/s² ft/s²</td>
<td></td>
</tr>
<tr>
<td>22_2</td>
<td>m/s² % ft/s² %</td>
<td>p2007</td>
</tr>
<tr>
<td>23_1</td>
<td>Vrms/s/m Vrms/s/m Vrms s/ft Vrms s/ft</td>
<td></td>
</tr>
<tr>
<td>24_1</td>
<td>Ns/m Ns/m lbf s/ft lbf s/ft</td>
<td></td>
</tr>
<tr>
<td>24_2</td>
<td>Ns/m % lbf s/ft %</td>
<td>p2000/p2003</td>
</tr>
<tr>
<td>26_1</td>
<td>m/s³ m/s³ ft/s³ ft/s³</td>
<td></td>
</tr>
<tr>
<td>39_1</td>
<td>1/s² % 1/s² %</td>
<td>p2007</td>
</tr>
</tbody>
</table>

### Table 1-6  Unit group (p0595)

<table>
<thead>
<tr>
<th>Unit group</th>
<th>Unit selection for p0595 = Value</th>
<th>Reference variable at %</th>
</tr>
</thead>
<tbody>
<tr>
<td>9_1</td>
<td>The values that can be set and the technological units are shown in p0595 (See Section 1.2).</td>
<td></td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
**Overview of parameters**

### Parameter values

<table>
<thead>
<tr>
<th>Min</th>
<th>Maximum value of the parameter [unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max</td>
<td>Value when shipped [unit]</td>
</tr>
</tbody>
</table>

In the case of a binector/connector input, the signal source of the default BICO interconnection is specified. A non-indexed connector output is assigned the index [0]. A different value may be displayed for certain parameters (e.g. p1800) during first commissioning.

**Reason:**

The setting for these parameters is determined by the operating environment of the Control Unit (e.g. depending on the device type, macro, or power unit).

---

**Note:**

For SINAMICS G130/G150, the macros and their settings are provided in the following documentation:

SINAMICS G130/G150 Operating Instructions

---

### Not for motor type

Specifies for which motor type this parameter has no significance.

- ASM: Induction motor
- FEM: Separately excited synchronous motor
- PEM: Permanent-magnet synchronous motor
- REL: Reluctance motor / SIEMOSYN motor

---

### Scaling

Specification of the reference variable with which a signal value is automatically converted for a BICO interconnection.

The following reference variables are available:

- p2000 ... p2007: Reference speed, reference voltage, etc.
- PERCENT: 1.0 = 100 %
- 4000H: 4000 hex = 100%
Parameters

Overview of parameters

**Expert list**

Specifies whether this parameter is available in the expert list of the specified drive objects in the commissioning software.

1: Parameter is available in the expert list.

0: Parameter is not available in the expert list.

**Notice:**

Users assume full responsibility for using parameters marked "Expert list: 0" (parameter does not exist in the expert list).

These parameters and their functionalities have not been tested and no further user documentation is available for them (e.g., description of functions). Moreover, no support is provided for these parameters by "Technical Support" (hotline).

**Description**

Explanation of the function of a parameter.

**Values**

List of the possible values of a parameter.

**Recommendation**

Information about recommended settings.

**Index**

The name and meaning of each individual index is specified for indexed parameters.

The following applies to the values (Min, Max, Factory setting) for indexed adjustable parameters:

- **Min, Max:**
  The adjustment range and unit apply to all indices.

- **Factory setting:**
  When all indices have the same factory setting, index 0 is specified with the unit to represent all indices.

  When the indices have different factory settings, they are all listed individually with the unit.
Bit array

For parameters with bit arrays, the following information is provided about each bit:

- Bit number and signal name
- Meaning with signal states 0 and 1
- Function diagram (optional)
  
  The signal is shown on this function diagram.

Dependency

Conditions that must be fulfilled in conjunction with this parameter. Also includes special effects that can occur between this parameter and others.

See also: List of other relevant parameters to be considered.

Safety notices

Important information that must be observed to avoid the risk of physical injury or material damage.

Information that must be observed to avoid any problems.

Information that the user may find useful.

Danger

The description of this safety notice can be found at the beginning of this manual (see Safety notices).

Warning

The description of this safety notice can be found at the beginning of this manual (see Safety notices).

Caution

The description of this safety notice can be found at the beginning of this manual (see Safety notices).

Caution

The description of this safety notice can be found at the beginning of this manual (see Safety notices).

Notice

The description of this safety notice can be found at the beginning of this manual (see Safety notices).

Note

Information that the user may find useful.
1.1.2 Number ranges of parameters

Note:
The following number ranges represent an overview for all of the parameters available for the SINAMICS drive family.
The parameters for the product described in this List Manual are described in detail in Section 1.2.

Parameters are grouped into the following number ranges:

Table 1-7 Number ranges for SINAMICS

<table>
<thead>
<tr>
<th>Range</th>
<th>From</th>
<th>To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0000</td>
<td>0099</td>
<td>Display and operation</td>
</tr>
<tr>
<td></td>
<td>0100</td>
<td>0199</td>
<td>Commissioning</td>
</tr>
<tr>
<td></td>
<td>0200</td>
<td>0299</td>
<td>Power unit</td>
</tr>
<tr>
<td></td>
<td>0300</td>
<td>0399</td>
<td>Motor</td>
</tr>
<tr>
<td></td>
<td>0400</td>
<td>0499</td>
<td>Encoder</td>
</tr>
<tr>
<td></td>
<td>0500</td>
<td>0599</td>
<td>Technology and units, motor-specific data, probes</td>
</tr>
<tr>
<td></td>
<td>0600</td>
<td>0699</td>
<td>Thermal monitoring, maximum current, operating hours, motor data, central probe</td>
</tr>
<tr>
<td></td>
<td>0700</td>
<td>0799</td>
<td>Control Unit terminals, measuring sockets</td>
</tr>
<tr>
<td></td>
<td>0800</td>
<td>0839</td>
<td>CDS, DDS data sets, motor changeover</td>
</tr>
<tr>
<td></td>
<td>0840</td>
<td>0879</td>
<td>Sequence control (e.g. signal source for ON/OFF1)</td>
</tr>
<tr>
<td></td>
<td>0880</td>
<td>0899</td>
<td>ESR, parking, control and status words</td>
</tr>
<tr>
<td></td>
<td>0900</td>
<td>0999</td>
<td>PROFIBUS/PROFIdrive</td>
</tr>
<tr>
<td></td>
<td>1000</td>
<td>1199</td>
<td>Setpoint channel (e.g. ramp-function generator)</td>
</tr>
<tr>
<td></td>
<td>1200</td>
<td>1299</td>
<td>Functions (e.g. motor holding brake)</td>
</tr>
<tr>
<td></td>
<td>1300</td>
<td>1399</td>
<td>V/f control</td>
</tr>
<tr>
<td></td>
<td>1400</td>
<td>1799</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>1800</td>
<td>1899</td>
<td>Gating unit</td>
</tr>
<tr>
<td></td>
<td>1900</td>
<td>1999</td>
<td>Power unit and motor identification</td>
</tr>
<tr>
<td></td>
<td>2000</td>
<td>2009</td>
<td>Reference values</td>
</tr>
<tr>
<td></td>
<td>2010</td>
<td>2099</td>
<td>Communication (fieldbus)</td>
</tr>
<tr>
<td></td>
<td>2100</td>
<td>2139</td>
<td>Faults and alarms</td>
</tr>
<tr>
<td></td>
<td>2140</td>
<td>2199</td>
<td>Signals and monitoring</td>
</tr>
<tr>
<td></td>
<td>2200</td>
<td>2359</td>
<td>Technology controller</td>
</tr>
<tr>
<td></td>
<td>2360</td>
<td>2399</td>
<td>Staging, hibernation</td>
</tr>
</tbody>
</table>
### Table 1-7 Number ranges for SINAMICS, continued

<table>
<thead>
<tr>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2500</td>
<td>Position control (LR) and basic positioning (EPOS)</td>
</tr>
<tr>
<td>2700</td>
<td>Reference values, display</td>
</tr>
<tr>
<td>2720</td>
<td>Load gear</td>
</tr>
<tr>
<td>2800</td>
<td>Logic operations</td>
</tr>
<tr>
<td>2900</td>
<td>Fixed values (e.g. per cent, torque)</td>
</tr>
<tr>
<td>3000</td>
<td>Motor identification results</td>
</tr>
<tr>
<td>3100</td>
<td>Real time clock (RTC)</td>
</tr>
<tr>
<td>3110</td>
<td>Faults and alarms</td>
</tr>
<tr>
<td>3200</td>
<td>Signals and monitoring</td>
</tr>
<tr>
<td>3400</td>
<td>Infeed control</td>
</tr>
<tr>
<td>3660</td>
<td>Voltage Sensing Module (VSM), Braking Module internal</td>
</tr>
<tr>
<td>3700</td>
<td>Advanced Positioning Control (APC)</td>
</tr>
<tr>
<td>3780</td>
<td>Synchronization</td>
</tr>
<tr>
<td>3820</td>
<td>Friction characteristic</td>
</tr>
<tr>
<td>3850</td>
<td>Functions (e.g. long stator)</td>
</tr>
<tr>
<td>3900</td>
<td>Management</td>
</tr>
<tr>
<td>4000</td>
<td>Terminal Board, Terminal Module (e.g. TB30, TM31)</td>
</tr>
<tr>
<td>4600</td>
<td>Sensor Module</td>
</tr>
<tr>
<td>4700</td>
<td>Trace</td>
</tr>
<tr>
<td>4800</td>
<td>Function generator</td>
</tr>
<tr>
<td>4950</td>
<td>OA application</td>
</tr>
<tr>
<td>5000</td>
<td>Spindle diagnostics</td>
</tr>
<tr>
<td>5400</td>
<td>Line droop control (e.g. shaft generator)</td>
</tr>
<tr>
<td>5500</td>
<td>Dynamic grid support (solar)</td>
</tr>
<tr>
<td>5600</td>
<td>PROFlenergy</td>
</tr>
<tr>
<td>5900</td>
<td>SINAMICS GM/SM/GL/SL</td>
</tr>
<tr>
<td>7000</td>
<td>Parallel connection of power units</td>
</tr>
<tr>
<td>7500</td>
<td>SINAMICS SM120</td>
</tr>
<tr>
<td>7700</td>
<td>External signals</td>
</tr>
<tr>
<td>7770</td>
<td>NVRAM, system parameters</td>
</tr>
<tr>
<td>7800</td>
<td>EEPROM read/write parameters</td>
</tr>
<tr>
<td>7840</td>
<td>Internal system parameters</td>
</tr>
<tr>
<td>8400</td>
<td>Real time clock (RTC)</td>
</tr>
<tr>
<td>8500</td>
<td>Data and macro management</td>
</tr>
</tbody>
</table>
### Table 1-7  Number ranges for SINAMICS, continued

<table>
<thead>
<tr>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8600</td>
<td>CAN bus</td>
</tr>
<tr>
<td>8800</td>
<td>Communication Board Ethernet (CBE), PROFIdrive</td>
</tr>
<tr>
<td>8900</td>
<td>Industrial Ethernet, PROFINET, CBE20</td>
</tr>
<tr>
<td>9000</td>
<td>Topology</td>
</tr>
<tr>
<td>9300</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>9400</td>
<td>Parameter consistency and storage</td>
</tr>
<tr>
<td>9500</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>9900</td>
<td>Topology</td>
</tr>
<tr>
<td>9950</td>
<td>Diagnostics, internal</td>
</tr>
<tr>
<td>10000</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>11000</td>
<td>Free technology controller 0, 1, 2</td>
</tr>
<tr>
<td>20000</td>
<td>Free function blocks (FBLOCKS)</td>
</tr>
<tr>
<td>21000</td>
<td>Drive Control Chart (DCC)</td>
</tr>
<tr>
<td>50000</td>
<td>SINAMICS DC MASTER (DC control)</td>
</tr>
<tr>
<td>61000</td>
<td>PROFINET</td>
</tr>
</tbody>
</table>
## 1.2 List of parameters

### r0002 Infeed operating display / INF op_display

**B_INF**

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** -
- **Min:** 0
- **Max:** 250

**Description:** Operating display for the infeed.

**Value:**
- 0: Operation - everything enabled
- 31: Rdy for sw on - pre-chrg running (p0857)
- 32: Ready for switching on - set "ON/OFF1" = "0/1" (p0840)
- 35: Switching on inhibited - carry out first commissioning (p0010)
- 41: Switching on inhibited - set "ON/OFF1" = "0" (p0840)
- 42: Switching on inhibited - set "OC/OFF2" = "1" (p0844, p0845)
- 44: Switching on inhibited - connect 24 V to terminal EP (hardware)
- 45: Switching on inhibited - remove fault cause, acknowledge fault
- 46: Switching on inhibited - exit comm mode (p0009, p0010)
- 60: Infeed de-activated/not operational
- 70: Initialization

**Dependency:** Refer to: r0046

**Notice:** For several missing enable signals, the corresponding value with the highest number is displayed.

**Note:**
- OC: Operating condition
- COMM: Commissioning

### r0002 Control Unit operating display / CU op_display

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** -
- **Min:** 0
- **Max:** 117

**Description:** Operating display for the Control Unit (CU).

**Value:**
- 0: Operation
- 10: Ready
- 20: Wait for run-up
- 25: Wait for automatic FW update of DRIVE-CLiQ components
- 31: Commissioning software download active
- 33: Remove/acknowledge topology error
- 35: Carry out first commissioning
- 70: Initialization
- 80: Reset active
- 99: Internal software error
- 101: Specify topology
- 111: Insert drive object
- 112: Delete drive object
- 113: Change drive object number
- 114: Change component number
- 115: Run parameter download
- 117: Delete component

**Notice:** For several missing enable signals, the corresponding value with the highest number is displayed.
### r0002 Encoder DO operating display / Enc DO op_display

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Operating display for encoder drive object

**Value:**
- 0: Encoder in cyclic operation
- 35: Carry out first commissioning (p0010)
- 45: Remove fault cause, acknowledge fault
- 46: Exit commissioning mode (p0009, p0010)
- 60: Encoder de-activated
- 200: Wait for booting/partial booting
- 250: Device signals a topology error

**Notice:** For several missing enable signals, the corresponding value with the highest number is displayed.

### r0002 DRIVE-CLiQ Hub Module operating display / Hub op_display

<table>
<thead>
<tr>
<th>HUB</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Operating display for the DRIVE-CLiQ Hub Module.

**Value:**
- 0: Module in cyclic operation
- 40: Module not in cyclic operation
- 50: Alarm
- 60: Fault
- 70: Initialization
- 120: Module de-activated
- 200: Wait for booting/partial booting
- 250: Device signals a topology error

**Notice:** For several missing enable signals, the corresponding value with the highest number is displayed.

### r0002 TB30 operating display / TB30 op_display

<table>
<thead>
<tr>
<th>TB30</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Operating display for Terminal Board 30 (TB30).

**Value:**
- 0: Module in cyclic operation
- 40: Module not in cyclic operation
- 60: Fault
- 70: Initialization
- 80: Reset active
- 120: Module de-activated
- 200: Wait for run-up
- 250: Device signals a topology error

**Notice:** For several missing enable signals, the corresponding value with the highest number is displayed.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0002 TM150 op_display</td>
<td>Operating display for Terminal Module 150 (TM150)</td>
<td>0: Module in cyclic operation, 40: Module not in cyclic operation, 50: Alarm, 60: Fault, 70: Initialization, 120: Module de-activated, 200: Wait for booting/partial booting, 250: Device signals a topology error</td>
<td>For several missing enable signals, the corresponding value with the highest number is displayed.</td>
</tr>
<tr>
<td>r0002 TM31 op_display</td>
<td>Operating display for Terminal Module 31 (TM31)</td>
<td>0: Module in cyclic operation, 40: Module not in cyclic operation, 50: Alarm, 60: Fault, 70: Initialization, 120: Module de-activated, 200: Wait for booting/partial booting, 250: Device signals a topology error</td>
<td>For several missing enable signals, the corresponding value with the highest number is displayed.</td>
</tr>
<tr>
<td>r0002 TM54F op_display</td>
<td>Operating display for Terminal Module 54F (TM54F)</td>
<td>0: Module in cyclic operation, 40: Module not in cyclic operation, 50: Alarm, 60: Fault, 70: Initialization, 120: Module de-activated, 200: Wait for booting/partial booting, 250: Device signals a topology error</td>
<td></td>
</tr>
</tbody>
</table>
### r0002  Drive operating display / Drv_op_display

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Operating display for the drive.</td>
</tr>
<tr>
<td>Value:</td>
<td></td>
</tr>
<tr>
<td>0:</td>
<td>Operation - everything enabled</td>
</tr>
<tr>
<td>10:</td>
<td>Operation - set &quot;enable setpoint&quot; = &quot;1&quot; (p1142, p1152)</td>
</tr>
<tr>
<td>11:</td>
<td>Operation - set &quot;enable speed controller&quot; = &quot;1&quot; (p0856)</td>
</tr>
<tr>
<td>12:</td>
<td>Operation - RFG frozen, set &quot;RFG start&quot; = &quot;1&quot; (p1141)</td>
</tr>
<tr>
<td>13:</td>
<td>Operation - set &quot;enable RFG&quot; = &quot;1&quot; (p1140)</td>
</tr>
<tr>
<td>14:</td>
<td>Oper. - MotID, excit. running and/or brake opens, SS2, SOS</td>
</tr>
<tr>
<td>15:</td>
<td>Operation - open brake (p1215)</td>
</tr>
<tr>
<td>16:</td>
<td>Operation - withdraw braking with OFF1 using &quot;ON/OFF1&quot; = &quot;1&quot;</td>
</tr>
<tr>
<td>17:</td>
<td>Operation - braking with OFF3 can only be interrupted with OFF2</td>
</tr>
<tr>
<td>18:</td>
<td>Operation - brake on fault, remove fault, acknowledge</td>
</tr>
<tr>
<td>19:</td>
<td>Operation - armature short-circ./DC brake act. (p1230, p1231)</td>
</tr>
<tr>
<td>21:</td>
<td>Ready for operation - set &quot;Operation enable&quot; = &quot;1&quot; (p0852)</td>
</tr>
<tr>
<td>22:</td>
<td>Ready for operation - de-magnetizing running (p0347)</td>
</tr>
<tr>
<td>23:</td>
<td>Ready for operation - set &quot;Infeed operation&quot; = &quot;1&quot; (p0864)</td>
</tr>
<tr>
<td>31:</td>
<td>Ready for switching on - set &quot;ON/OFF1&quot; = &quot;0/1&quot; (p0840)</td>
</tr>
<tr>
<td>35:</td>
<td>Switching on inhibited - carry out first commissioning (p0010)</td>
</tr>
<tr>
<td>41:</td>
<td>Switching on inhibited - set &quot;ON/OFF1&quot; = &quot;0&quot; (p0840)</td>
</tr>
<tr>
<td>42:</td>
<td>Switching on inhibited - set &quot;OC/OFF2&quot; = &quot;1&quot; (p0844, p0845)</td>
</tr>
<tr>
<td>43:</td>
<td>Switching on inhibited - set &quot;OC/OFF3&quot; = &quot;1&quot; (p0848, p0849)</td>
</tr>
<tr>
<td>44:</td>
<td>Switching on inhibited - connect 24 V to terminal EP (hardware)</td>
</tr>
<tr>
<td>45:</td>
<td>Switching on inhibited - rectify fault, acknowledge fault, STO</td>
</tr>
<tr>
<td>46:</td>
<td>Switching on inhibited - exit comm mode (p0009, p0010)</td>
</tr>
<tr>
<td>60:</td>
<td>Drive object de-activated/not operational</td>
</tr>
<tr>
<td>70:</td>
<td>Initialization</td>
</tr>
<tr>
<td>200:</td>
<td>Wait for booting/partial booting</td>
</tr>
<tr>
<td>250:</td>
<td>Device signals a topology error</td>
</tr>
</tbody>
</table>

### p0003  BOP access level / BOP_acc_level

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Sets the access level for reading and writing parameters via the Basic Operator Panel (BOP).</td>
</tr>
</tbody>
</table>
## List of parameters

### Parameters

- **Value:**
  - 1: Standard
  - 2: Extended
  - 3: Expert
  - 4: Service

### Note:
- Access level 1 (standard):
  - Parameters for simplest possible operations.
- Access level 2 (extended):
  - Parameters to operate the basic functions of the drive unit.
- Access level 3 (experts):
  - Expert know-how is required for these parameters (e.g. BICO parameterization).
- Access level 4 (service):
  - For these parameters, it is necessary that authorized service personnel enter the appropriate password (p3950).

### Description:
Sets the display filter for parameters with the Basic Operator Panel (BOP).

### p0004

#### BOP display filter / BOP disp_filter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>C2(1), U, T</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

- **Data type:** Integer16
- **Dynamic index:** -
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Min:** 0
- **Max:** 99
- **Factory setting:** 0

### Dependency:
Refer to: p0003

### Notice:
The display filter via p0004 provides precise filtering and displays the corresponding parameters only when p0009 and p0010 = 0.

### Note:
The set access level via p0003 is also relevant for the display filter via p0004.

Examples (assumption: p0009 = p0010 = 0):
- **p0003 = 1, p0004 = 3**
  - Only the parameters for the motor with access level 1 are displayed.
- **p0003 = 2, p0004 = 3**
  - Only the parameters for the motor with access levels 1 and 2 are displayed.
### BOP operating display selection / BOP op_disp sel

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Function</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0005[0...1]</td>
<td>All objects</td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:**
Sets the parameter number and parameter index for display for p0006 = 2, 4 for the Basic Operator Panel (BOP).

**Examples for the SERVO drive object:**
- p0005[0] = 21, p0005[1] = 0: Actual speed smoothed (r0021)
- p0005[0] = 25, p0005[1] = 0: Output voltage smoothed (r0025)

**Index:**
- [0] = Parameter number
- [1] = Parameter index

**Dependency:**
Refer to: p0006

**Note:**
Procedure:
1. The parameter number to be displayed should be set in index 0. Only the monitoring parameters (read-only parameters) can be set that actually exist for the actual drive object. If the set parameter number is not indexed, or if there is an index in index 1 that lies outside the valid range of the set parameter, then index 1 is automatically set to 0.
2. The index that belongs to the parameter set in index 0 should be set in index 1. The permissible changes in index 1 always depend on the parameter number set in index 0.

### BOP operating display mode / BOP op_disp mode

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Function</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0006</td>
<td>B_INF, VECTOR_G</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode of the operating display for the Basic Operator Panel (BOP) in the operating states "ready for operation" and "operation".

**Value:**
- 0: Operation → r0021, otherwise r0020 ↔ r0021
- 1: Operation → r0021, otherwise r0020
- 2: Operation → p0005, otherwise p0005 ↔ r0020
- 3: Operation → r0002, otherwise r0002 ↔ r0020
- 4: p0005

**Dependency:**
Refer to: p0005

**Note:**
Mode 0 ... 3 can only be selected if also r0020, r0021 are available on the drive object. Mode 4 is available for all drive objects.
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0006</td>
<td>BOP operating display mode / BOP op_disp mode</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the mode of the operating display for the Basic Operator Panel (BOP) in the operating states &quot;ready for operation&quot; and &quot;operation&quot;.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>4: p0005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refer to: p0005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>Mode 0 ... 3 can only be selected if also r0020, r0021 are available on the drive object. Mode 4 is available for all drive objects.</td>
<td></td>
</tr>
<tr>
<td>p0007</td>
<td>BOP background lighting / BOP lighting</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [s]</td>
<td>2000 [s]</td>
<td>0 [s]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the delay time until the background lighting of the Basic Operator Panel (BOP) is switched off. If no keys are actuated, then the background lighting automatically switches itself off after this time has expired.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>p0007 = 0: Background lighting is always switched on (factory setting).</td>
<td></td>
</tr>
<tr>
<td>p0008</td>
<td>BOP drive object after booting / BOP DO after boot</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>65535</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the required drive object that is active at the Basic Operator Panel (BOP) after booting. The value from p0008 initializes the display on the Basic Operator Panel (BOP) at the top left after booting. The drive object Control Unit is selected using the value 1.</td>
<td></td>
</tr>
<tr>
<td>p0009</td>
<td>Device commissioning parameter filter / Dev comm par_filt</td>
<td>Can be changed: C1, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>10000</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the device and basic drive commissioning. By appropriately setting this parameter, those parameters are filtered that can be written into in the various commissioning steps.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: Ready</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Device configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Defining the drive type/function module</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: Drive base configuration</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: Data set base configuration</td>
<td></td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

29: Device download
30: Parameter reset
50: OA application configuration
55: OA application installation
101: Topology input
111: Insert drive object
112: Delete drive object
113: Change drive object number
114: Change component number
115: Parameter download
117: Delete component
10000: Ready (asynchron)

**Notice:**
For p0009 = 10000 the following applies:
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:**
The drives can only be powered up outside the device commissioning (the inverter enabled). In this case, p0009 must be 0 (Ready) and the individual drive objects must have already gone into operation (p0010).

p0009 = 1: Device configuration
At the first commissioning of the device, after booting, the device is in the "device configuration" state. To start the internal automatic first commissioning of the drive unit, p0009 should be set to 0 (Ready) after the ID for the actual topology (r0098) was transferred into the ID for the target topology (p0099). To do this, it is sufficient to set a single index value of p0099[x] the same as r0098[x]. Before the device has been completely commissioned, no other parameter can be changed. After the first commissioning was carried out, in this state, when required, other basic device configuration parameters can be adapted (e.g. the basic sampling time in p0110).

p0009 = 2: Defines the drive type / function module
In this state, the drive object types and/or the function modules can be changed or selected for the individual drive objects. To do this, the drive object type can be set using p0107[0...15] and the function can be set using p0108[0...15] (refer to p0101[0...15]).

p0009 = 3: Drive basic configuration
In this state, after the device has been commissioned for the first time, basic changes can be made for the individual drive objects (e.g. sampling times in p0111, p0112, p0115 and the number of data sets in p0120, p0130, p0140, p0170, p0180).

p0009 = 4: Data set basic configuration
In this state, after the device has been commissioned for the first time, for the individual drive objects changes can be made regarding the assignment of the components (p0121, p0131, p0141, p0151, p0161) to the individual data sets and the assignment of the power unit, motor and encoder to the drive data sets (p0185, ...).

p0009 = 29: Device download
If a download is made using the commissioning software, the device is automatically brought into this state. After the download has been completed, p0009 is automatically set to 0 (ready). It is not possible to manually set p0009 to this value.

p0009 = 30: Parameter reset
In order to bring the complete unit into the "first commissioning" state or to load the parameters saved using p0977, to start, p0009 must be set to this value. p0976 can then be changed to the required value.

p0009 = 50: OA application configuration
In this state, after the device has been commissioned for the first time, changes can be made for the individual drive objects regarding the activity (p4956) of the OA applications.

p0009 = 55: OA application installation
OA applications can be installed and/or uninstalled in this state.

p0009 = 101: Topology input
In this state, the DRIVE-CLIQ target topology can be entered using p9902 and p9903.

p0009 = 111: Insert drive object
This state allows a new drive object to be inserted using p9911.

p0009 = 112: Delete drive object
This state allows existing drive objects to be deleted using p9912 after the device has been commissioned for the first time.

p0009 = 113: Change drive object number
This state allows the drive object number of existing drive objects to be changed using p9913 after the device has been commissioned for the first time.
p0009 = 114: Change component number
This state allows the component number of existing components to be changed using p9914 after the device has been commissioned for the first time.

p0009 = 115: Parameter download
This state allows the complete device and drive commissioning using the parameter services.

p0009 = 117: Delete component
This state allows components to be deleted using p9917 after the device has been commissioned for the first time.

<table>
<thead>
<tr>
<th>p0010</th>
<th>Infeed commissioning parameter filter / INF comm par_filt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

**Description:**
Sets the parameter filter to commission an infeed unit.
Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

**Value:**
- 0: Ready
- 1: Quick commissioning
- 2: Power unit commissioning
- 5: Technological application/units
- 29: Only Siemens int
- 30: Parameter reset

**Note:**
The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.
For p3900 not equal to 0, at the end of the quick commissioning, this parameter is automatically reset to 0.
Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

<table>
<thead>
<tr>
<th>p0010</th>
<th>Encoder DO commissioning parameter filter / EncDO com par_filt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

**Description:**
Sets the parameter filter to commission an encoder drive object.
Setting this parameter filters out the parameters that can be written into in the various commissioning steps.
For the BOP, this setting also causes the read access operations to be filtered.

**Value:**
- 0: Ready
- 4: Encoder commissioning
- 5: Technological application/units
- 29: Only Siemens int
- 30: Parameter reset

**Note:**
Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

<table>
<thead>
<tr>
<th>p0010</th>
<th>TB30 commissioning parameter filter / TB30 comm.par_filt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>30</td>
</tr>
</tbody>
</table>

**Description:**
Sets the parameter filter for commissioning a Terminal Board 30 (TB30).
Setting this parameter filters out the parameters that can be written into in the various commissioning steps.
### Parameters

#### List of parameters

For the BOP, this setting also causes the read access operations to be filtered.

**Value:**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ready</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Only Siemens int</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Parameter reset</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p0970

**Note:**

Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
</table>
| p0010     | TM150 commissioning parameter filter / TM150 com par_filt | **Value:**
|           | Can be changed: C2(1), T | Calculated: - | Access level: 1 |
|           | Data type: Integer16 | Dynamic index: - | Func. diagram: - |
|           | P-Group: - | Units group: - | Unit selection: - |
|           | Not for motor type: - | Scaling: - | Expert list: 1 |
|           | Min | Max | 0 |
|           | 30 | 0 |   |
|           | **Description:** | Sets the parameter filter for commissioning a Terminal Module 150 (TM150). Setting this parameter filters out the parameters that can be written into in the various commissioning steps. For the BOP, this setting also causes the read access operations to be filtered. |
|           | **Value:**
|           | 0 | Ready |   |
|           | 29 | Only Siemens int |   |
|           | 30 | Parameter reset |   |
|           | **Dependency:** | Refer to: p0970 |   |
|           | **Note:** | Only the following values are possible: p0010 = 0, 30 |
|           | Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1. |   |
|           | p0010 | TM31 commissioning parameter filter / TM31 comm par_filt | **Value:**
|           | Can be changed: C2(1), T | Calculated: - | Access level: 1 |
|           | Data type: Integer16 | Dynamic index: - | Func. diagram: - |
|           | P-Group: - | Units group: - | Unit selection: - |
|           | Not for motor type: - | Scaling: - | Expert list: 1 |
|           | Min | Max | 0 |
|           | 30 | 0 |   |
|           | **Description:** | Sets the parameter filter for commissioning a Terminal Module 31 (TM31). Setting this parameter filters out the parameters that can be written into in the various commissioning steps. For the BOP, this setting also causes the read access operations to be filtered. |
|           | **Value:**
|           | 0 | Ready |   |
|           | 29 | Only Siemens int |   |
|           | 30 | Parameter reset |   |
|           | **Dependency:** | Refer to: p0970 |   |
|           | **Note:** | Only the following values are possible: p0010 = 0, 30 |
|           | Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1. |   |
|           | p0010 | TM54F commissioning parameter filter / TM54F com par_filt | **Value:**
|           | Can be changed: C2(1), T | Calculated: - | Access level: 1 |
|           | Data type: Integer16 | Dynamic index: - | Func. diagram: 2847 |
|           | P-Group: - | Units group: - | Unit selection: - |
|           | Not for motor type: - | Scaling: - | Expert list: 1 |
|           | Min | Max | 0 |
|           | 95 | 0 |   |
|           | **Description:** | Sets the parameter filter for commissioning a Terminal Module 54F (TM54F). Setting this parameter filters out the parameters that can be written into in the various commissioning steps. For the BOP, this setting also causes the read access operations to be filtered. |
### p0010 Drive commissioning parameter filter / Drv comm. par_filt

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(1), T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2800, 2846</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the parameter filter to commission a drive.

**Value:**
- 0: Ready
- 1: Quick commissioning
- 2: Power unit commissioning
- 3: Motor commissioning
- 4: Encoder commissioning
- 5: Technological application/units
- 15: Data sets
- 17: Basic positioner commissioning
- 25: Position control commissioning
- 29: Only Siemens int
- 30: Parameter reset
- 95: Safety Integrated commissioning
- 10000: Ready with immediate feedback signal

**Notice:**
*For p0010 = 10000 the following applies:*
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Procedure for "Reset parameter":** Set p0010 to 30 and p0970 to 1.

**Note:**
- The drive can only be powered up outside the drive commissioning (inverter enable). To realize this, this parameter must be set to 0.
- By setting p3900 to a value other than 0, the quick commissioning is completed, and this parameter is automatically reset to 0.
- Procedure for "Reset parameter": Set p0010 to 30 and p0970 to 1.
- p0010 = 10000 corresponds to p0010 = 0. Unlike with p0010 = 0, the parameter modification is applied immediately and the calculations are made in the background. Further parameter modifications cannot be made while the calculations are being performed.

### p0011 BOP password entry (p0013) / BOP passw ent p13

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the password for the Basic Operator Panel (BOP).

**Value:**
- 0: Ready
- 10000: Ready with immediate feedback signal

**Dependency:**
Refer to: p0012, p0013
### p0012 BOP password acknowledgement (p0013) / BOP passw ackn p13

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0012</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Functions  
**Not for motor type:** -  
**Min:** 0  
**Max:** 65535  
**Factory setting:** 0

**Description:** Acknowledges the password for the Basic Operator Panel (BOP).

**Dependency:** Refer to: p0011, p0013

### p0013[0...49] BOP user-defined list / BOP list

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0013</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Functions  
**Not for motor type:** -  
**Min:** 0  
**Max:** 65535  
**Factory setting:** 0

**Description:** Sets the required parameters to read and write via the Basic Operator Panel (BOP).

**Activation:**
1. p0003 = 3 (expert).
2. p0013[0...49] = requested parameter number
3. If required, enter p0011 = password in order to prevent non-authorized de-activation.
4. p0016 = 1 --> activates the selected user-defined list.

**De-activation/change:**
1. p0003 = 3 (expert).
2. If required, p0012 = p0011, in order to be authorized to change or de-activate the list.
3. If required p0013[0...49] = required parameter number.
4. p0016 = 1 --> activates the modified user-defined list.
5. p0003 = 0 --> de-activates the user-defined list.

**Dependency:** Refer to: p0009, p0011, p0012, p0976

**Note:**
- The following parameters can be read and written on the Control Unit drive object:  
  - p0003 (access stage)
  - p0009 (device commissioning, parameter filter)
  - p0012 (BOP password acknowledgement (p0013))
- The following applies for the user-defined list:
  - password protection is only available on the drive object Control Unit and is valid for all of the drive objects.
  - p0013 cannot be included in the user-defined list for all drive objects.
  - p0003, p0009, p0011, p0012, p0976 cannot, for the drive object Control Unit, be included in the user-defined list.
  - the user-defined list can be cleared and de-activated “restore factory setting”.
- A value of 0 means: Entry is empty.

### p0015 Macro drive object / Macro DO

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0015</td>
<td>C2(1)</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** Commands  
**Not for motor type:** -  
**Min:** 0  
**Max:** 999999  
**Factory setting:** 0

**Description:** Runs the corresponding macro files.

**The selected macro file must be available on the memory card/device memory.**

**Example:**
- p0015 = 6 --> the macro file PM000006.ACX is run.
Dependency: Refer to: p0700, p1000, p1500, r8570

Caution: When executing a specific macro, the corresponding programmed settings are made and become active.

Notice: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

Note: The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

The parameter is not influenced by setting the factory setting.

### p0015 Macro drive unit / Macro drv unit

<table>
<thead>
<tr>
<th>Device</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>C1, U, T</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**P-Group:** -

**Units group:** -

**Scaling:** -

**Unit selection:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Max**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>999999</td>
</tr>
</tbody>
</table>

**Factory setting**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:

p0015 = 6 --> the macro file PM000006.ACX is run.

**Dependency:** Refer to: p0700, p1000, p1500, r8570

**Caution:** When executing a specific macro, the corresponding programmed settings are made and become active.

**Notice:** After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:** The macros in the specified directory are displayed in r8570. r8570 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

The parameter is not influenced by setting the factory setting.

### p0016 Activate BOP user-defined list / BOP user list act

<table>
<thead>
<tr>
<th>Device</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>C1, U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Integer16

**P-Group:** -

**Units group:** -

**Scaling:** -

**Unit selection:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Max**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Factory setting**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Setting for activating/de-activating the user-defined list for the Basic Operator Panel (BOP).

If p0016 = 1, then it is only possible to access parameters in the parameter list (p0013).

**Value:**

0: BOP user-defined list de-activated
1: BOP user-defined list activated

**Dependency:** Refer to: p0011, p0012, p0013

**Note:** The user-defined list can only be de-activated with p0011 = p0012

### r0018 Control Unit firmware version / CU FW version

<table>
<thead>
<tr>
<th>Device</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**P-Group:** -

**Units group:** -

**Scaling:** -

**Unit selection:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Max**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4294967295</td>
</tr>
</tbody>
</table>

**Factory setting**

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the firmware version of the Control Unit.

**Dependency:** Refer to: r0128, r0148, r0158, r0197, r0198
### Parameters

#### List of parameters

**Note:**
Example:
The value 1010100 should be interpreted as V01.01.01.00.

**r0019.0...14**
**CO/BO: Control word BOP / STW BOP**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>ON / OFF (OFF1)</td>
<td>ON</td>
<td>OFF (OFF1)</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>No coast-down / coast-down (OFF2)</td>
<td>No coast down</td>
<td>Coast down (OFF2)</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>No Quick Stop / Quick Stop (OFF3)</td>
<td>No Quick Stop</td>
<td>Quick Stop (OFF3)</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault (0 -&gt; 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Motorized potentiometer raise</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Motorized potentiometer lower</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the control word for the Basic Operator Panel (BOP).

**Dependency:**
Refer to: r0060

**Note:**
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

**r0020**
**Speed setpoint smoothed / n_set smth**

**Vector G**

**Can be changed:**

**Calculated:**

**Access level:** 2

**Data type:** FloatingPoint32

**Dynamic index:** -

**Func. diagram:** 5020, 6799

**P-Group:** Displays, signals

**Units group:** 3_1

**Unit selection:** p0505

**Not for motor type:**

**Scaling:** p2000

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:**
Displays the currently smoothed speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).

**Dependency:**
Refer to: r0060

**Note:**
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

**r0021**
**CO: Actual speed smoothed / n_act smooth**

**Vector G**

**Can be changed:**

**Calculated:**

**Access level:** 2

**Data type:** FloatingPoint32

**Dynamic index:** -

**Func. diagram:** 4710, 6799

**P-Group:** Displays, signals

**Units group:** 3_1

**Unit selection:** p0505

**Not for motor type:**

**Scaling:** p2000

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:**
Displays the smoothed actual value of the motor speed.

**Dependency:**
Refer to: r0022, r0063

**Note:**
Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The speed setpoint is available smoothed (r0021, r0022) and unsmoothed (r0063).
For U/f control, the mechanical speed calculated from the output frequency and the slip is shown in r0063[2] even if slip compensation is deactivated.
### r0022
**Speed actual value rpm smoothed / n_act rpm smooth**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the smoothed actual value of the motor speed.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:** r0021, r0063

**Note:**
- Smoothing time constant = 100 ms
- The signal is not suitable as a process quantity and may only be used as a display quantity.

For U/f control and when slip compensation is deactivated (see p1335), the synchronous speed to the output frequency is shown in r0022.

For U/f control, the mechanical speed calculated from the output frequency and the slip is shown in r0063[2] even if slip compensation is deactivated.

### r0024
**Output frequency smoothed / f_outp smooth**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the smoothed converter frequency.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:** r0066

**Note:**
- Smoothing time constant = 100 ms
- The signal is not suitable as a process quantity and may only be used as a display quantity.

The output frequency is available smoothed (r0024) and unsmoothed (r0066).

### r0025
**CO: Output voltage smoothed / U_outp smooth**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the smoothed output voltage of the power unit.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Dependency:** r0072

**Note:**
- Smoothing time constant = 100 ms
- The signal is not suitable as a process quantity and may only be used as a display quantity.

The output voltage is available smoothed (r0025) and unsmoothed (r0072).
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0026</td>
<td>Displays the smoothed actual value of the DC link voltage.</td>
<td>Refer to: r0070</td>
<td>This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.</td>
<td>A_INF, B_INF, S_INF: smoothing time constant = 300 ms The signal is not suitable as a process quantity and may only be used as a display quantity. The DC link voltage is available smoothed (r026) and unsmoothed (r0070).</td>
</tr>
<tr>
<td>r0026</td>
<td>Displays the smoothed actual value of the DC link voltage.</td>
<td>Refer to: r0070</td>
<td>For SINAMICS S120 AC Drive (AC/AC) the following applies: When measuring a DC link voltage &lt; 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24 V power supply is connected, a value of approx. 24 V is displayed in the display parameter.</td>
<td>SERVO, VECTOR: Smoothing time constant = 100 ms The signal is not suitable as a process quantity and may only be used as a display quantity. The DC link voltage is available smoothed (r026) and unsmoothed (r0070).</td>
</tr>
<tr>
<td>r0027</td>
<td>Displays the smoothed absolute actual current value.</td>
<td>Refer to: r0068</td>
<td>This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used. For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.</td>
<td>Smoothing time constant = 300 ms The signal is not suitable as a process quantity and may only be used as a display quantity. The absolute current actual value is available smoothed (r027) and unsmoothed (r0068).</td>
</tr>
</tbody>
</table>
### r0027 Absolute actual current smoothed / I_\text{act abs val smth}

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 5730, 6799, 8850
- **P-Group:** Displays, signals
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Scaling:** p2002
- **Factory setting:**

**Description:**
Displays the smoothed absolute actual current value.

**Dependency:**
Refer to: r0068

**Notice:**
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

**Note:**
A_INF, S_INF, VECTOR: Smoothing time constant = 300 ms
SERVO: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The absolute current actual value is available smoothed (r0027) and unsmoothed (r0068).

### r0028 Modulation depth smoothed / Mod_depth smth

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 5730, 6799, 8950
- **P-Group:** Displays, signals
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Scaling:** p2002
- **Factory setting:**

**Description:**
Displays the smoothed actual value of the modulation depth.

**Dependency:**
Refer to: r0074

**Note:**
A_INF: Smoothing time constant = 300 ms
SERVO, VECTOR: Smoothing time constant = 100 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The modulation depth is available smoothed (r0028) and unsmoothed (r0074).

### r0029 Current actual value field-generating smoothed / Id_\text{act smooth}

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 5730, 6799
- **P-Group:** Displays, signals
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Scaling:** p2002
- **Factory setting:**

**Description:**
Displays the smoothed field-generating actual current.

**Dependency:**
Refer to: r0076

**Note:**
SERVO: Smoothing time constant = 100 ms
VECTOR: Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.
The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).
**r0030**

**Current actual value torque-generating smoothed / Iq_act_smooth**

**VECTOR_G**

Can be changed: -  
Calculated: -  
Access level: 3

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: 5730, 6799

P-Group: Displays, signals  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: p2002  
Expert list: 1

Min - [Arms]  
Max - [Arms]  
Factory setting

**Description:**
Displays the smoothed torque-generating actual current.

**Dependency:**
Refer to: r0078

**Note:**
SERVO: Smoothing time constant = 100 ms  
VECTOR: Smoothing time constant = 300 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The following applies for SERVO:
The torque-generating current actual value is available smoothed (r0030 with 100 ms, r0078[1] with p0045) and unsmoothed (r0078[0]).

The following applies for VECTOR:
The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

---

**r0031**

**Actual torque smoothed / M_act_smooth**

**VECTOR_G**

Can be changed: -  
Calculated: -  
Access level: 2

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: 5730, 6799

P-Group: Displays, signals  
Units group: 7_1  
Unit selection: p0505

Not for motor type: -  
Scaling: p2003  
Expert list: 1

Min - [Nm]  
Max - [Nm]  
Factory setting

**Description:**
Displays the smoothed torque actual value.

**Dependency:**
Refer to: r0080

**Note:**
Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

The active current actual value is available smoothed (r0031) and unsmoothed (r0080).

---

**r0032**

**CO: Active power actual value smoothed / P_actv_act_smth**

**B_INF**

Can be changed: -  
Calculated: -  
Access level: 2

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: 5730, 6799, 8750, 8850, 8950

P-Group: Displays, signals  
Units group: 14_10  
Unit selection: p0505

Not for motor type: -  
Scaling: r2004  
Expert list: 1

Min - [kW]  
Max - [kW]  
Factory setting

**Description:**
Displays the smoothed actual value of the active power.

**Dependency:**
Refer to: r0082

**Notice:**
This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.

For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

**Note:**
Significance for the drive: Power output at the motor shaft

Significance for the infeed: Line power drawn

For A_INF, B_INF and S_INF the following applies:
The active power is available smoothed (r0032 with 300 ms) and unsmoothed (r0082).

The following applies for SERVO:
The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).
For VECTOR and VECTORMV, the following applies:
The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0032</td>
<td>CO: Active power actual value smoothed / P_actv_act smth</td>
<td>Displays the smoothed actual value of the active power.</td>
<td>This smoothed signal is not suitable for diagnostics or evaluation of dynamic operations. In this case, the unsmoothed value should be used.</td>
<td>Significance for the drive: Power output at the motor shaft. Significance for the infeed: Line power drawn. For A_INF, B_INF and S_INF the following applies: The active power is available smoothed (r0032 with 300 ms) and unsmoothed (r0082). The following applies for SERVO: The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]). For VECTOR and VECTORMV, the following applies: The active power is available smoothed (r0032 with 100 ms) and unsmoothed (r0082).</td>
</tr>
<tr>
<td>r0033</td>
<td>Torque utilization smoothed / M_util smooth</td>
<td>Displays the smoothed torque utilization as a percentage.</td>
<td>The signal is not suitable as a process quantity and may only be used as a display quantity.</td>
<td>Smoothing time constant = 100 ms. The torque utilization is obtained from the required smoothed torque in reference to the torque limit, scaled using p2196.</td>
</tr>
</tbody>
</table>

### Parameter Details:

#### r0032 - CO: Active power actual value smoothed / P_actv_act smth
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** - [kW]
- **Max:** - [kW]
- **Access level:** 2
- **Func. diagram:** 5730, 6799, 8750, 8850, 8950
- **Units group:** 14_10
- **Unit selection:** p0505
- **Expert list:** 1

#### r0033 - Torque utilization smoothed / M_util smooth
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** - [%]
- **Max:** - [%]
- **Access level:** 3
- **Func. diagram:** 8012
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting**

### Factory setting:

- r0032: [kW] - [kW] - [kW]
- r0033: [%] - [%] - [%]
### r0034: Motor utilization / Motor utilization

**Description:**
Displays the motor utilization from motor temperature model 1 (I2t) or 3.

**Dependency:**
The motor utilization is only determined for permanent-magnet synchronous motors when the motor temperature model 1 (I2t) or 3 is activated.

For motor temperature model 1 (I2t) (p0612.0 = 1), the following applies:
\[
\text{r0034} = \frac{(\text{motor model temperature} - 40 \, \text{K})}{(p0605 - 40 \, \text{K})} \times 100\% 
\]

For motor temperature model 3 (p0612.2 = 1), the following applies:
\[
\text{r0034} = \frac{(\text{motor model temperature} - p0613)}{(p5390 - p0613)} \times 100\% 
\]

**Notice:**
After the drive is switched on, the system starts to determine the motor temperature with an assumed model value. This means that the value for the motor utilization is only valid after a stabilization time.

**Note:**
Smoothing time constant = 100 ms

The signal is not suitable as a process quantity and may only be used as a display quantity.

For r0034 = -200.0 %, the following applies:
- The value is invalid (e.g. the motor temperature model is not activated or has been incorrectly parameterized).

### r0035: Temperature input / Temp_input

**Description:**
Displays the temperature currently measured at X21 (booksize) or X41 (chassis).

For a BLM with internal Braking Module, a bimetallic sensor must be connected up to monitor the temperature of the braking resistor. The temperature sensor type is indicated using p0601 and cannot be changed for the existing internal Braking Module.

Temperature within permissible limit values: r0035 = -50°C
Temperature outside the permissible limit values: r0035 = 250°C

**Notice:**
The function in r0192.11 must be available in order to obtain a correct display.

**Note:**
- For r0035 equal to -200.0 °C, the following applies:
  - "no sensor" selected in p0601!
- For r0035 equal to -300.0 °C, the following applies:
  - a KTY84 is selected in p0601 but is not connected!
  - the temperature display is not valid (temperature sensor error)!

### r0035: Motor temperature / Mot temp

**Description:**
Displays the actual temperature in the motor.
Note:
For r0035 not equal to -200.0 °C, the following applies:
- this temperature display is valid.
- a KTY sensor is connected.
- the thermal model for the induction motor is activated (p0612 bit 1 = 1 and temperature sensor de-activated: p0600 = 0 or p0601 = 0).

For r0035 equal to -200.0 °C, the following applies:
- this temperature display is not valid (temperature sensor error).
- A PTC sensor or bimetallic NC contact is connected.
- the temperature sensor of the synchronous motor is de-activated (p0600 = 0 or p0601 = 0).

r0036 CO: Power unit overload I2t / PU overload I2t
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: 8014
P-Group: Displays, signals Units group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min - [%] Max - [%] Factory setting
Description:
Displays the power unit overload determined using the I2t calculation.
A current reference value is defined for the I2t monitoring of the power unit. It represents the current that can be conducted by the power unit without any influence of the switching losses (e.g. the continuously permissible current of the capacitors, inductances, busbars, etc.).
If the I2t reference current of the power unit is not exceeded, then an overload (0 %) is not displayed.
In the other case, the degree of thermal overload is calculated, whereby 100% results in a trip.
Dependency:
Refer to: p0290, p0294
Refer to: F30005

r0037[0...19] CO: Power unit temperatures / PU temperatures
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: 8014
P-Group: Displays, signals Units group: 21_1 Unit selection: p0505
Not for motor type: - Scaling: p2006 Expert list: 1
Min - [°C] Max - [°C] Factory setting
Description:
Displays the temperatures in the power unit.
Index:
[0] = Inverter, maximum value
[1] = Depletion layer maximum value
[2] = Rectifier maximum value
[3] = Air intake
[4] = Interior of power unit
[5] = Inverter 1
[6] = Inverter 2
[7] = Inverter 3
[8] = Inverter 4
[9] = Inverter 5
[10] = Inverter 6
[11] = Rectifier 1
[12] = Rectifier 2
[13] = Depletion layer 1
[14] = Depletion layer 2
[15] = Depletion layer 3
[16] = Depletion layer 4
[17] = Depletion layer 5
[18] = Depletion layer 6
[19] = Cooling unit liquid intake
### Parameters

#### List of parameters

**Note:**

The value of -200 indicates that there is no measuring signal.

- `r0037[0]`: Maximum value of the inverter temperatures (r0037[5...10]).
- `r0037[1]`: Maximum value of the depletion layer temperatures (r0037[13...18]).
- `r0037[2]`: Maximum value of the rectifier temperatures (r0037[11...12]).

The maximum value is the temperature of the hottest inverter, depletion layer, or rectifier.

#### r0037[0...1] Control Unit temperature / CU temp

| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: - |
| P-Group: Displays, signals | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: p2006 | Expert list: 1 |

**Min** | **Max** | **Factory setting**
- [°C] | - [°C] | - [°C]

**Description:**
Displays the measured Control Unit temperature.

**Index:**
- [0] = Actual measured value
- [1] = Maximum measured value

**Dependency:**
Refer to: A01009

**Note:**
The value of -200 indicates that there is no measuring signal.

#### r0038 Power factor smoothed / Cos phi smooth

|VECTOR_G | Can be changed: - | Calculated: - | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: 6799, 8850, 8950 |
| P-Group: Displays, signals | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

**Min** | **Max** | **Factory setting**
- | - |

**Description:**
Displays the smoothed actual power factor.

**Notice:**
For infeed units, the following applies:
For active powers < 25 % of the rated power, this does not provide any useful information.

**Note:**
Smoothing time constant = 300 ms
The signal is not suitable as a process quantity and may only be used as a display quantity.

**Meaning for motor:**
- Power factor of the basic fundamental signals at the converter output.

**Meaning for infeed:**
- Power factor at the connection point (r3470, r3471)

#### r0039[0...2] Energy display / Energy displ

|VECTOR_G | Can be changed: - | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: - |
| P-Group: Displays, signals | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

**Min** | **Max** | **Factory setting**
- [kWh] | - [kWh] |

**Description:**
Displays the energy values at the output terminals of the power unit.

**Index:**
- [0] = Energy balance (sum)
- [1] = Energy drawn
- [2] = Energy fed back

**Dependency:**
Refer to: p0040

**Note:**
Re index 0:
Sum of the energy drawn and energy that is fed back.
p0040  | Reset energy consumption display / Energy usage reset
--- | ---
**VECTOR_G** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Unsigned8 | Dynamic index: - | Func. diagram: -
P-Group: Displays, signals | Units group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
0 | 1 | 0
Description: Setting to reset the display in r0039 and r0041.
Procedure: Set p0040 = 0 --> 1
The displays are reset and the parameter is automatically set to zero.
Dependency: Refer to: r0039

r0041  | Energy consumption saved / Energy cons saved
--- | ---
**VECTOR_G** | Can be changed: - | Calculated: - | Access level: 2
Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: -
P-Group: Displays, signals | Units group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
- [kWh] | - [kWh] | - [kWh]
Description: Displays the saved energy referred to 100 operating hours.
Dependency: Refer to: p0040
Note: This display is used for a fluid-flow machine.
The flow characteristic is entered into p3320 ... p3329.
For an operating time of below 100 hours, the display is interpolated up to 100 hours.

p0045  | Display values smoothing time constant / Disp_val T_smooth
--- | ---
**VECTOR_G** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: 4715, 5610, 5730, 6714, 8012
P-Group: - | Units group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
0.00 [ms] | 10000.00 [ms] | 1.00 [ms]
Description: Sets the smoothing time constant for the following display values:
SERVO: r0078[1], r0079[1], r0081 (calculated from the quantities smoothed with p0045), r0082[1].
VECTOR: r0063[1], r0068[1], r0080[1], r0082[1].

r0046.0...29  | CO/BO: Missing enable sig / Missing enable sig
--- | ---
**B_INF** | Can be changed: - | Calculated: - | Access level: 1
Data type: Unsigned32 | Dynamic index: - | Func. diagram: 8734
P-Group: Displays, signals | Units group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
Description: Displays missing enable signals that are preventing the closed-loop infeed control from being commissioned.
Bit field: | Bit | Signal name | 1 signal | 0 signal | FP
--- | --- | --- | --- | --- | ---
00 | OFF1 enable missing | Yes | No | - | -
01 | OFF2 enable missing | Yes | No | - | -
08 | EP terminals enable missing | Yes | No | - | -
16 | OFF1 enable internal missing | Yes | No | - | -
17 | OFF2 enable internal missing | Yes | No | - | -
### List of parameters

<table>
<thead>
<tr>
<th>Bit</th>
<th>Infeed inactive or not operational</th>
<th>Cooling unit ready signal missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>01</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>02</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>03</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>04</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>05</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>07</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>08</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>09</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>12</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>13</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>14</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>15</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>16</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>17</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>18</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>19</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>20</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>21</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>22</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>23</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>24</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>25</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>26</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>27</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>28</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>29</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>30</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>31</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

#### Dependency:
Refer to: r0002

#### Note:
The value r0046 = 0 indicates that all enable signals for the infeed are present.

- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

### r0046.0...31

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>OFF1 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>01</td>
<td>OFF2 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>02</td>
<td>OFF3 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>03</td>
<td>Operation enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>04</td>
<td>Armature short-circuit / DC braking, enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>05</td>
<td>STOP2 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>06</td>
<td>STOP1 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>07</td>
<td>Safety enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>08</td>
<td>Infeed enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>09</td>
<td>Ramp-function generator enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>10</td>
<td>Ramp-function generator start missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>11</td>
<td>Setpoint enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>12</td>
<td>OFF1 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>13</td>
<td>OFF2 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>14</td>
<td>OFF3 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>15</td>
<td>Pulse enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>16</td>
<td>Armature short-circuit/DC braking internal enable missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>17</td>
<td>STOP2 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>18</td>
<td>STOP1 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>19</td>
<td>Function bypass active</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>20</td>
<td>Drive inactive or not operational</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>21</td>
<td>De-magnetizing not completed</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>22</td>
<td>Brake open missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>23</td>
<td>Cooling unit ready signal missing</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>24</td>
<td>Speed controller inhibited</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
<tr>
<td>25</td>
<td>Jog setpoint active</td>
<td>Yes</td>
<td>No</td>
<td>7014, 7016</td>
</tr>
</tbody>
</table>

#### Dependency:
Refer to: r0002
Note: The value r0046 = 0 indicates that all enable signals for this drive are present.

Bit 00 = 1 (enable signal missing), if:
- the signal source in p0840 is a 0 signal.
- there is a "switching on inhibited".

Bit 01 = 1 (enable signal missing), if:
- the signal source in p0844 or p0845 is a 0 signal.

Bit 02 = 1 (enable signal missing), if:
- the signal source in p0848 or p0849 is a 0 signal.

Bit 03 = 1 (enable signal missing), if:
- the signal source in p0852 is a 0 signal.

Bit 04 = 1 (armature short-circuit active), if:
- the signal source in p1230 has a 1 signal

Bit 05, Bit 06: Being prepared

Bit 08 = 1 (enable signal missing), if:
- safety functions have been enabled and STO is active.

STO selected via terminals:
- the pulse enable via terminal EP is missing (booksise: X21, chassis: X41), or the signal source in p9620 is for a 0 signal.

STO selected via PROFI safe or TM54F:
- A safety-relevant signal is present with a STOP A response.

Bit 09 = 1 (enable signal missing), if:
- the signal source in p0864 is a 0 signal.

Bit 10 = 1 (enable signal missing), if:
- the signal source in p1140 is a 0 signal.

Bit 11 = 1 (enable signal missing) if the speed setpoint is frozen, because:
- the signal source in p1141 is a 0 signal.
- the speed setpoint is entered from jogging and the two signal sources for jogging, bit 0 (p1055) and bit 1 (p1056) have a 1 signal.

Bit 12 = 1 (enable signal missing), if:
- the signal source in p1142 is a 0 signal.
- When activating the function module "basic positioner" (r0108.4 = 1), the signal source in p1142 is set to a 0 signal.

Bit 16 = 1 (enable signal missing), if:
- there is an OFF1 fault response. The system is only enabled if the fault is removed and was acknowledged and the "switching on inhibited" withdrawn with OFF1 = 0.

Bit 17 = 1 (enable signal missing), if:
- commissioning mode is selected (p0009 > 0 or p0010 > 0).
- there is an OFF2 fault response.
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).

Bit 18 = 1 (internal pulse enable missing), if:
- OFF3 has still not been completed or an OFF3 fault response is present.

Bit 19 = 1 (internal pulse enable missing), if:
- synchronization is running between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle.

Bit 20 = 1 (internal armature short-circuit active), if:
- the drive is not in the state "S4: Operation" or "S5x" (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).

Bit 21 = 1 (enable signal missing), if:
- The pulses have been enabled and the speed setpoint has still not been enabled, because:
  - the holding brake opening time (p1216) has still not expired.
  - the motor has still not been magnetized (induction motor).
  - the encoder has not been calibrated (U/f vector and synchronous motor)

Bit 22: Being prepared

Bit 26 = 1 (enable signal missing), if:
- the drive is inactive (p0105 = 0) or is not operational (r7850[DO-Index]=0).
- All power units of a parallel connection are deactivated (p0125, p0895).

Bit 27 = 1 (enable signal missing), if:
- de-magnetizing has still not been completed (only for vector).

Bit 28 = 1 (enable signal missing), if:
- the holding brake is closed or has still not been opened.

Bit 29 = 1 (enable signal missing), if:

Bit 30 = 1 (speed controller inhibited), if one of the following reasons is present:
- A 0 signal is available via BI: p0856.
- the function generator with current input is active.
- the measuring function "current controller reference frequency characteristic" is active.
- the pole position identification is active.
- motor data identification is active (only certain steps).

Bit 31 = 1 (enable signal missing), if:
- the speed setpoint from jog 1 or 2 is entered.

---

**r0047**  
**Motor data identification and speed controller optimization / MotID and n_opt**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 1

**Data type:** Integer16  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Displays, signals  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0

**Max**  
300

**Factory setting**  
-

**Description:** Displays the actual status for the motor data identification (stationary measurement) and the speed/velocity controller optimization (rotating measurement).

**Value:**
- 0: No measurement
- 115: Measurement q leakage inductance (part 2)
- 120: Speed controller optimization (vibration test)
- 140: Calculate speed controller setting
- 150: Measurement, moment of inertia
- 170: Measurement, magnetizing current and saturation characteristic
- 190: Speed encoder test
- 195: Measurement q leakage inductance (part 1)
- 200: Rotating measurement selected
- 210: Pole position identification selected
- 220: Identification, leakage inductance
- 230: Identification, rotor time constant
- 240: Identification, stator inductance
- 250: Identification, stator inductance LQD
- 270: Identification, stator resistance
- 290: Identification, valve lockout time
- 300: Stationary measurement selected

**Note:**
- Re r0047 = 300:
  - This value is also displayed if encoder calibration p1990 is selected.

---

**r0049[0...3]**  
**Motor data set/encoder data set effective / MDS/EDS effective**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 2

**Data type:** Unsigned8  
**Dynamic index:** -  
**Func. diagram:** 8565

**P-Group:** Displays, signals  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
-

**Max**  
-

**Factory setting**  
-

**Description:** Displays the effective Motor Data Set (MDS) and the effective Encoder Data Sets (EDS).

**Index:**
- [0] = Motor Data Set MDS effective
- [1] = Encoder 1 Encoder Data Set EDS effective
### List of parameters

#### [2] = Encoder 2 Encoder Data Set EDS effective

**Dependency:** Refer to: p0186, p0187, p0188, p0189, r0838

**Note:** Value 99 means the following: No encoder assigned (not configured).

<table>
<thead>
<tr>
<th>r0050.0...3</th>
<th><strong>CO/BO: Command Data Set CDS effective / CDS effective</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Parameter description and details</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>Dynamic:</td>
</tr>
<tr>
<td>Units group:</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Data type:</td>
</tr>
<tr>
<td>Signal name</td>
<td>CanBe changed:</td>
</tr>
<tr>
<td>00 CDS eff., bit 0</td>
<td>1 signal</td>
</tr>
<tr>
<td>01 CDS eff., bit 1</td>
<td>1 signal</td>
</tr>
<tr>
<td>02 CDS eff., bit 2</td>
<td>1 signal</td>
</tr>
<tr>
<td>03 CDS eff., bit 3</td>
<td>1 signal</td>
</tr>
</tbody>
</table>

**Description:** Displays the effective Command Data Set (CDS).

**Dependency:** Refer to: p0810, p0811, r0836

**Note:** The Command Data Set selected using a binary input (e.g. p0810) is displayed using r0836.

#### [3] = Encoder 3 Encoder Data Set EDS effective

<table>
<thead>
<tr>
<th>r0051.0...4</th>
<th><strong>CO/BO: Drive Data Set DDS effective / DDS effective</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Parameter description and details</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>Dynamic:</td>
</tr>
<tr>
<td>Units group:</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Data type:</td>
</tr>
<tr>
<td>Signal name</td>
<td>CanBe changed:</td>
</tr>
<tr>
<td>00 DDS eff., bit 0</td>
<td>1 signal</td>
</tr>
<tr>
<td>01 DDS eff., bit 1</td>
<td>1 signal</td>
</tr>
<tr>
<td>02 DDS eff., bit 2</td>
<td>1 signal</td>
</tr>
<tr>
<td>03 DDS eff., bit 3</td>
<td>1 signal</td>
</tr>
<tr>
<td>04 DDS eff., bit 4</td>
<td>1 signal</td>
</tr>
</tbody>
</table>

**Description:** Displays the effective Drive Data Set (DDS).

**Dependency:** Refer to: p0820, p0821, p0822, p0823, p0824, r0837

**Note:** The drive data set changeover is suppressed when selecting the motor identification, during the rotating measurement, the encoder calibration and the friction characteristic record.

<table>
<thead>
<tr>
<th>r0056.0...15</th>
<th><strong>CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Parameter description and details</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>Dynamic:</td>
</tr>
<tr>
<td>Units group:</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Data type:</td>
</tr>
<tr>
<td>Signal name</td>
<td>CanBe changed:</td>
</tr>
<tr>
<td>00 Initialization completed</td>
<td>1 signal</td>
</tr>
<tr>
<td>01 De-magnetizing completed</td>
<td>1 signal</td>
</tr>
<tr>
<td>02 Pulse enable present</td>
<td>1 signal</td>
</tr>
<tr>
<td>03 Soft starting present</td>
<td>1 signal</td>
</tr>
<tr>
<td>04 Magnetizing completed</td>
<td>1 signal</td>
</tr>
<tr>
<td>05 Voltage boost when starting</td>
<td>1 signal</td>
</tr>
<tr>
<td>06 Acceleration voltage</td>
<td>1 signal</td>
</tr>
</tbody>
</table>

**Description:** Displays the status word of the closed-loop control.

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Parameters
List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Unit</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0060</td>
<td>CO: Speed setpoint before the setpoint filter / n_set before filt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
<td>2701, 2704, 5020, 6030, 6799</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>- [rpm]</td>
<td>Max</td>
<td>- [rpm]</td>
<td>Factory setting:</td>
</tr>
<tr>
<td>Description:</td>
<td></td>
<td></td>
<td></td>
<td>Displays the actual speed setpoint at the input of the speed controller or U/f characteristic (after the interpolator).</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r020</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r0061     | CO: Actual speed unsmoothed / n_act unsmoothed |
| ENC      | Can be changed: | Calculated: | Access level: | 2 |
| Data type: | FloatingPoint32 | Dynamic index: | Func. diagram: | 1580, 4710, 4715 |
| P-Group: | Displays, signals | Units group: | 3_1 | Unit selection: | p0505 |
| Not for motor type: | - | Scaling: | p2000 | Expert list: | 1 |
| Min | - [rpm] | Max | - [rpm] | Factory setting: | |
| Description: | | | | Displays the unsmoothed actual speed values sensed by the encoders. |
| Note: | The speed actual value within a PROFIBUS cycle (r2064[1]) is averaged and displayed. |

| r0061     | CO: Actual velocity unsmoothed / v_act unsmoothed |
| ENC (Lin_enc)  | Can be changed: | Calculated: | Access level: | 2 |
| Data type: | FloatingPoint32 | Dynamic index: | Func. diagram: | 1580, 4710, 4715 |
| P-Group: | Displays, signals | Units group: | 4_1 | Unit selection: | p0505 |
| Not for motor type: | - | Scaling: | p2000 | Expert list: | 1 |
| Min | - [m/min] | Max | - [m/min] | Factory setting: | |
| Description: | | | | Displays the unsmoothed actual velocity values sensed by the encoders. |
| Note: | The velocity actual value within a PROFIBUS cycle (r2064[1]) is averaged and displayed. |
List of parameters

**r0061[0...2]**  
**CO: Actual speed unsmoothed / n_act unsmoothed**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Displays the actual speed values sensed by the encoders.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = Encoder 1</td>
</tr>
<tr>
<td></td>
<td>[1] = Encoder 2</td>
</tr>
<tr>
<td></td>
<td>[2] = Encoder 3</td>
</tr>
<tr>
<td>Note:</td>
<td>With a parameterized filter time constant p1441, the speed signal from encoder 1 is displayed corrected by the following error.</td>
</tr>
<tr>
<td></td>
<td>The speeds from encoder 2 and 3 are only displayed in U/f operating modes if the function module (speed/torque control) (r0108.2) has been activated.</td>
</tr>
</tbody>
</table>

**r0062**  
**CO: Speed setpoint after the filter / n_set after filter**

| Description: | Displays the actual speed setpoint after the setpoint filters. |

**r0063[0...2]**  
**CO: Speed actual value / n_act**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Displays the actual speed of the closed-loop speed control and the U/f control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = Unsmoothed</td>
</tr>
<tr>
<td></td>
<td>[1] = Smoothed with p0045</td>
</tr>
<tr>
<td></td>
<td>[2] = Calculated from f_set - f_slip</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r0021, r0022</td>
</tr>
<tr>
<td>Note:</td>
<td>The speed actual value is calculated in encoderless operation and for U/f control.</td>
</tr>
<tr>
<td></td>
<td>For operation with encoder, r0063[0] is smoothed with p1441.</td>
</tr>
<tr>
<td></td>
<td>The speed actual value (r0063[0]) is additionally displayed - smoothed with p0045 - in r0063[1].</td>
</tr>
<tr>
<td></td>
<td>The speed (r0063[2]) calculated from the output frequency and slip can only be compared with the speed actual value (r0063[0]) in the steady-state.</td>
</tr>
<tr>
<td></td>
<td>The actual speed (r0063[0]) is available as a display quantity with additional smoothing in r0021.</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

**r0064**  
**CO: Speed controller system deviation / n_ctrl system dev**  
**VECTOR_G**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 5040, 6040  
- **P-Group:** Displays, signals  
- **Units group:** 3_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2000  
- **Expert list:** 1  
- **Min** - [rpm]  
- **Max** - [rpm]  
- **Factory setting** - [rpm]  

**Description:** Displays the actual system deviation of the speed controller.  
**Note:** In servo control mode with active reference model, the system deviation to the P component of the speed controller is displayed.

**r0065**  
**Slip frequency / f_Slip**  
**VECTOR_G**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 1710, 6310, 6727, 6730, 6732  
- **P-Group:** Displays, signals  
- **Units group:** 2_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2000  
- **Expert list:** 1  
- **Min** - [Hz]  
- **Max** - [Hz]  
- **Factory setting** - [Hz]  

**Description:** Displays the slip frequency for induction motors (ASM).

**r0066**  
**CO: Output frequency / f_outp**  
**VECTOR_G**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 1690, 5300, 5730, 6310, 6730, 6731, 6799  
- **P-Group:** Displays, signals  
- **Units group:** 2_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2000  
- **Expert list:** 1  
- **Min** - [Hz]  
- **Max** - [Hz]  
- **Factory setting** - [Hz]  

**Description:** Displays the Motor Module output frequency.  
**Dependency:** Refer to: r0024  
**Note:** The output frequency is available smoothed (r0024) and unsmoothed (r0066).

**r0067**  
**CO: Output current, maximum / I_outp max**  
**VECTOR_G**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 5722, 6300, 6640, 6724  
- **P-Group:** Displays, signals  
- **Units group:** 6_2  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2002  
- **Expert list:** 1  
- **Min** - [Arms]  
- **Max** - [Arms]  
- **Factory setting** - [Arms]  

**Description:** Displays the maximum output current of the Motor Module.  
**Dependency:** The maximum output current is determined by the parameterized current limit and the motor and converter thermal protection.  
Refer to: p0290, p0640
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0068</td>
<td>CO: DC current in the DC link / I_{dc DC link}</td>
<td>B_INF</td>
<td>Displays the DC current in the DC link.</td>
<td>The DC current in the DC link is available smoothed (r0027) and unsmoothed (r0068).</td>
</tr>
<tr>
<td>r0068[0...1]</td>
<td>CO: Absolute current actual value / I_{act abs val}</td>
<td>VECTOR_G</td>
<td>Displays actual absolute current.</td>
<td>The absolute value of the current actual value is available smoothed (r0027 with 300 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).</td>
</tr>
<tr>
<td>r0069[0...6]</td>
<td>CO: Phase current actual value / I_{phase act value}</td>
<td>VECTOR_G</td>
<td>Displays the measured actual phase currents as peak value.</td>
<td>The sum of the 3 corrected phase currents is displayed in index 6.</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Dependency</td>
<td>Notice</td>
<td>Note</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>------------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>r0070</td>
<td>Actual DC link voltage / Vdc act val</td>
<td>Displays the measured actual value of the DC link voltage.</td>
<td>For SINAMICS S120 AC Drive (AC/AC) the following applies: When measuring a DC link voltage &lt; 200 V, for the Power Module (e.g. PM340) a valid measured value is not supplied. In this case, when an external 24V power supply is connected, a value of approx. 24 V is displayed.</td>
<td>The DC link voltage is available smoothed (r0026) and unsmoothed (r0070).</td>
</tr>
<tr>
<td>r0070</td>
<td>Actual DC link voltage / Vdc act val</td>
<td>Displays the measured actual value of the DC link voltage.</td>
<td>As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.</td>
<td></td>
</tr>
<tr>
<td>r0071</td>
<td>Maximum output voltage / U_output max</td>
<td>Displays the maximum output voltage.</td>
<td>The maximum output voltage depends on the actual DC link voltage (r0070) and the maximum modulation depth (p1803).</td>
<td>As the (driven) motor load increases, the maximum output voltage drops as a result of the reduction in DC link voltage.</td>
</tr>
<tr>
<td>r0072</td>
<td>Output voltage / U_output</td>
<td>Displays the actual power unit output voltage (Motor Module).</td>
<td>The output voltage is available smoothed (r0025) and unsmoothed (r0072).</td>
<td></td>
</tr>
</tbody>
</table>
### r0073 - Maximum modulation depth / Modulat_depth_max

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0073</td>
<td>Displays the maximum modulation depth.</td>
<td>Refer to: p1803</td>
<td>For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol. Values above 100% indicate an overcontrol condition - values below 100% have no overcontrol. The phase voltage (phase-to-phase, rms) is calculated as follows: (r0074 x r0070) / (sqrt(2) x 100 %). The modulation depth is available smoothed (r0028) and unsmoothed (r0074).</td>
</tr>
</tbody>
</table>

### r0074 - CO: Modulat_depth / Modulat_depth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0074</td>
<td>Displays the actual modulation depth.</td>
<td>Refer to: r0028</td>
<td>For space vector modulation, 100% corresponds to the maximum output voltage without overcontrol. Values above 100% indicate an overcontrol condition - values below 100% have no overcontrol. The phase voltage (phase-to-phase, rms) is calculated as follows: (r0074 x r0070) / (sqrt(2) x 100 %). The modulation depth is available smoothed (r0028) and unsmoothed (r0074).</td>
</tr>
</tbody>
</table>

### r0075 - CO: Current setpoint field-generating / Id_set

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0075</td>
<td>Displays the field-generating current setpoint (Id_set).</td>
<td>This value is irrelevant for the U/f control mode.</td>
<td></td>
</tr>
</tbody>
</table>

### r0076 - CO: Current actual value field-generating / Id_act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0076</td>
<td>Displays the field-generating current actual value (Id_act).</td>
<td>Refer to: r0029</td>
<td>This value is irrelevant for the U/f control mode. The field-generating current actual value is available smoothed (r0029) and unsmoothed (r0076).</td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

---

**r0077**

**CO: Current setpoint torque-generating / Iq_set**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **P-Group:** Displays, signals
- **Units group:** 6_2
- **Not for motor type:** -
- **Scaling:** p2002
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Access level:** 3
- **Func. diagram:** 1630, 1774, 5714, 6714, 6719
- **Unit selection:** p0505
- **Expert list:** 1
- **Factory setting:** - [Arms]

**Description:** Displays the torque/force generating current setpoint.

**Note:** This value is irrelevant for the U/f control mode.

---

**r0078**

**CO: Current actual value torque-generating / Iq_act**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **P-Group:** Displays, signals
- **Units group:** 6_2
- **Not for motor type:** -
- **Scaling:** p2002
- **Min:** - [Arms]
- **Max:** - [Arms]
- **Access level:** 3
- **Func. diagram:** 1710, 6310, 6714, 6799
- **Unit selection:** p0505
- **Expert list:** 1
- **Factory setting:** - [Arms]

**Description:** Displays the torque-generating current actual value (Iq_act).

**Dependency:** Refer to: r0030

**Note:** This value is irrelevant for the U/f control mode.

The torque-generating current actual value is available smoothed (r0030 with 300 ms) and unsmoothed (r0078).

---

**r0079**

**CO: Torque setpoint / M_set total**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **P-Group:** Displays, signals
- **Units group:** 7_1
- **Not for motor type:** -
- **Scaling:** p2003
- **Min:** - [Nm]
- **Max:** - [Nm]
- **Access level:** 3
- **Func. diagram:** 1700, 1710, 6030, 6060, 6710, 8012
- **Unit selection:** p0505
- **Expert list:** 1
- **Factory setting:** - [Nm]

**Description:** Displays the torque setpoint at the output of the speed controller.

---

**r0080[0...1]**

**CO: Torque actual value / M_act**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **P-Group:** Displays, signals
- **Units group:** 7_1
- **Not for motor type:** -
- **Scaling:** p2003
- **Min:** - [Nm]
- **Max:** - [Nm]
- **Access level:** 3
- **Func. diagram:** 6714, 6799
- **Unit selection:** p0505
- **Expert list:** 1
- **Factory setting:** - [Nm]

**Description:** Displays the actual torque value.

**Index:**
- [0] = Unsmoothed
- [1] = Smoothed with p0045

**Dependency:** Refer to: r0031

**Note:** The torque actual value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]).
### r0081 CO: Torque utilization / M_Utilization

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 8012
- **P-Group:** Displays, signals
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min**
- [- %]
- **Max**
- [- %]
- **Factory setting**

**Description:**
Displays the torque utilization as a percentage.
The torque utilization is obtained from the required smoothed torque referred to the torque limit.

**Dependency:**
Refer to: r0033

**Note:**
The torque utilization is available smoothed (r0033) and unsmoothed (r0081).
The torque utilization is obtained from the required torque referred to the torque limit as follows:
- Positive torque: $r0081 = \frac{(r0079 / r1538)} {r1538} \times 100\%$
- Negative torque: $r0081 = \frac{(-r0079) / (-r1539)} {-r1539} \times 100\%$

### r0082 CO: Active power actual value / P_act

**B_INF**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 8750, 8850, 8950
- **P-Group:** Displays, signals
- **Units group:** 14_7
- **Unit selection:** p0505
- **Not for motor type:** -
- **Scaling:** r004
- **Expert list:** 1
- **Min**
- [- kW]
- **Max**
- [- kW]
- **Factory setting**

**Description:**
Displays the instantaneous active power.

**Dependency:**
Refer to: r0032

**Notice:**
For Basic Line Modules of chassis format, the displayed value is invalid as these units do not have any current sensing.

**Note:**
The active power is available smoothed (r0032) and unsmoothed (r0082).

### r0082[0...2] CO: Active power actual value / P_act

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6714, 6799
- **P-Group:** Displays, signals
- **Units group:** 14_5
- **Unit selection:** p0505
- **Not for motor type:** -
- **Scaling:** r004
- **Expert list:** 1
- **Min**
- [- kW]
- **Max**
- [- kW]
- **Factory setting**

**Description:**
Displays the instantaneous active power.

**Index:**

- [0] = Unsmoothed
- [1] = Smoothed with p0045
- [2] = Electric power

**Dependency:**
Refer to: r0032

**Note:**
The mechanical active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]).

### r0083 CO: Flux setpoint / Flex setp

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Displays, signals
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min**
- [- %]
- **Max**
- [- %]
- **Factory setting**

**Description:**
Displays the flux setpoint.
Parameters
List of parameters

r0084[0...1] CO: Flux actual value / Flux act val
VECTOR_G
Can be changed: -
Data type: FloatingPoint32
Dynamic index: -
P-Group: Displays, signals
Units group: -
Not for motor type: -
Scaling: PERCENT
Min - [%]
Max - [%]
Access level: 3
Func. diagram: 6726, 6730, 6732

Description: Displays the flux actual value.

Index:
[0] = Unsmoothed
[1] = Smoothed

Note:
The flux actual value (index 1) smoothed with p1585 is only displayed for separately-excited synchronous motors.
In the following cases, the unsmoothed flux actual value is also displayed:
- in the range of the current model.
- during the pole position identification.
- for V/f control.
- for a stalled drive.

r0087 CO: Actual power factor / Cos phi act
VECTOR_G
Can be changed: -
Data type: FloatingPoint32
Dynamic index: -
P-Group: Displays, signals
Units group: -
Not for motor type: -
Scaling: -
Min -
Max -
Access level: 3
Func. diagram: 6714, 6730, 6732, 6799

Description: Displays the actual power factor.

r0088 CO: DC link voltage setpoint / Vdc setpoint
VECTOR_G (Tech_ctrl)
Can be changed: -
Data type: FloatingPoint32
Dynamic index: -
P-Group: Displays, signals
Units group: 5_2
Not for motor type: -
Scaling: p2001
Min - [V]
Max - [V]
Access level: 3
Func. diagram: -
Unit selection: p0505
Expert list: 1

Description: Displays the setpoint for the DC link voltage.

r0089[0...2] Actual phase voltage / U_phase act val
VECTOR_G
Can be changed: -
Data type: FloatingPoint32
Dynamic index: -
P-Group: Displays, signals
Units group: 5_3
Not for motor type: -
Scaling: p2001
Min - [V]
Max - [V]
Access level: 3
Func. diagram: 6719
Unit selection: p0505
Expert list: 1

Description: Displays the actual phase voltage.

Index:
[0] = Phase U
[1] = Phase V
[2] = Phase W

Note:
The values are determined from the transistor power-on duration.
### p0092 Clock synchronous operation pre-assignment/check / Clock sync op

<table>
<thead>
<tr>
<th>Address</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: C1(1) Calculated: -</td>
<td>1</td>
<td>Integer16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Setting to pre-assign/check the sampling times for the internal controller clock cycles for clock-synchronous PROFIdrive operation.

Re p0092 = 1:
The controller clock cycles are set so that clock synchronous PROFIdrive operation is possible. If it is not possible to change the controller clock cycles of the clock-cycle synchronous PROFIdrive operation, then an appropriate message is output.
The pre-setting of the controller clock cycles can result in a derating of the Motor Module (e.g. p0115[0] = 400 µs > 375 µs).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PROFIdrive PZD" (from V4.4) and "Send BEFORE IF2 PROFIdrive PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

Re p0092 = 0:
The controller clock cycles are set without any restrictions by the clock-cycle PROFIdrive operation (same as for up to V2.3).

When calculating the drive unit utilization (r9976), when using the fixed DCC runtime groups "Receive AFTER IF1 PROFIdrive PZD", "Send BEFORE IF1 PROFIdrive PZD", "Receive AFTER IF2 PROFIdrive PZD" (from V4.4) and "Send BEFORE IF2 PROFIdrive PZD" (from V4.4), then its maximum computing time load has already been calculated during ramp-up for isochronous operation and taken into account in r9976 (from V4.3).

**Value:**
0: No isochronous PROFIBUS
1: Isochronous PROFIBUS

**Dependency:**
Refer to: r0110, p0115
Refer to: A01223, A01224

**Caution:**
Only current controller clock cycles (p0115[0]) which are integers of 125 µs are permitted for isochronous mode.
In addition, current controller clock cycles 31.25 µs and 62.5 µs are possible.

**Notice:**
p0092 only affects the automatic default for the clock cycles (p0115) in the drive. If the clock cycles are modified subsequently in expert mode (p0112 = 0), p0092 = 0 should be set so that the new values are not overwritten again by the automatic default when the parameters are downloaded.
The conditions for current controller clock cycle for isosynchronous operation must still be carefully ensured (refer under Caution!).

### r0094 CO: Transformation angle / Transformat_angle

<table>
<thead>
<tr>
<th>Address</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: -</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Displays, signals</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the transformation angle.

**Dependency:**
Refer to: p0431, r1778

**Note:**
The transformation angle corresponds to the electrical commutation angle.
If no pole position identification is carried out (p1982), and the encoder is adjusted, the following applies:
The encoder supplies the value and indicates the electrical angle of the flux position (d axis).
**Parameters**

**List of parameters**

**p0097**

Select drive object type / Select DO type

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
  - Can be changed: C1(1)
  - Data type: Integer16
  - P-Group: Topology
  - Not for motor type: -
  - Description:
    - Executes an automatic device configuration.
    - In so doing, p0099, p0107 and p0108 are appropriately set.
  - Value:
    - 0: No selection
    - 1: Drive object type SERVO
    - 2: Drive object type VECTOR
    - 3: SINAMICS GM (DFEMV & VECTORMV)
    - 4: SINAMICS SM (AFEMV & VECTORMV)
    - 5: SINAMICS SL (VECTORMV & VECTORMV)
    - 6: SINAMICS SL (VECTORMV)
    - 12: Drive object type VECTOR parallel circuit
    - 13: Drive object type VECTORMV - GM parallel circuit
    - 14: Drive object type VECTORMV - SM parallel circuit
    - 15: Drive object type DC_CTRL
    - 16: Drive object type SERVO HMI
    - 17: Drive object type VECTOR HMI
    - 24: Drive object type VECTORMV - SM parallel circuit
  - Dependency:
    - Refer to: r0098, p0099
    - Refer to: A01330
  - Note:
    - For p0097 = 0, p0099 is automatically set to the factory setting.
The possible settings are dependent upon the device type.

**r0098[0...5]**

Actual device topology / Device_act topo

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
  - Can be changed: -
  - Data type: Unsigned32
  - P-Group: Topology
  - Not for motor type: -
  - Description:
    - Displays the automatically detected actual device topology in coded form.
    - The possible settings are dependent upon the device type.
  - Index:
    - [0] = DRIVE-CLIQ socket X100
    - [1] = DRIVE-CLIQ socket X101
    - [2] = DRIVE-CLIQ socket X102
    - [3] = DRIVE-CLIQ socket X103
    - [4] = DRIVE-CLIQ socket X104
    - [5] = DRIVE-CLIQ socket X105
  - Dependency:
    - Refer to: p0097, p0099
  - Note:
    - Topology coding: abcd efgh hex
    - a = number of Active Line Modules
    - b = number of Motor Modules
    - c = number of motors
    - d = number of encoders (or the line supply voltage sensing for Active Line Modules)
    - e = number of additional encoders (or the line supply voltage sensing for Active Line Modules)
    - f = number of Terminal Modules
    - g = number of Terminal Boards
    - h = reserved
    - If the value 0 is displayed in all indices, then components are not detected via DRIVE-CLIQ.
    - If a value F hex occurs at a position of the coding (abcd efgh hex), then an overflow has occurred.
**Parameters**

**List of parameters**

---

### p0099[0...5] Device target topology / Device_target topo

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Topology</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

- **Min:** 0000 hex
- **Max:** FFFF FFFF hex
- **Factory setting:** 0000 hex

**Description:**
Sets the device target topology in coded form (refer to r0098). The setting is made during commissioning. De-activated or non-available components are also counted.

**Index:**
- [0] = DRIVE-CLiQ socket X100
- [1] = DRIVE-CLiQ socket X101
- [2] = DRIVE-CLiQ socket X102
- [3] = DRIVE-CLiQ socket X103
- [4] = DRIVE-CLiQ socket X104
- [5] = DRIVE-CLiQ socket X105

**Dependency:**
The parameter can only be written into for p0097 = 0.

To perform an automatic device configuration run, an index of the device target topology must be set to the value of the device actual topology in r0098 for acknowledgement. An index of the device actual topology with a value other than 0 must be selected.

Refer to: p0097, r0098
Refer to: A01330

**Note:**
The parameter can only be set to the values 0, the value of the actual device topology, the value of the actual device target topology and FFFFFFFF hex.
If the value 0 is displayed in all of the indices, then the system has still not been commissioned.
The value FFFFFFFF hex indicates that the topology was not generated by the automatic device configuration but was commissioned using the commissioning software (e.g. using parameter download).

---

### p0100 IEC/NEMA mot stds / IEC/NEMA mot stds

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Converter</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>FEM</td>
</tr>
</tbody>
</table>

- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Defines whether the motor and drive converter power settings (e.g. rated motor power, p0307) are expressed in [kW] or [hp].
Depending on the selection, the rated motor frequency (p0310) is either set to 50 Hz or 60 Hz.
For p0100 = 0, the following applies: The power factor (p0308) should be parameterized.
For p0100 = 1, the following applies: The efficiency (p0309) should be parameterized.

**Value:**
- 0: IEC-Motor (50 Hz, SI units)
- 1: NEMA motor (60 Hz, US units)

**Dependency:**
If p0100 is changed, all of the rated motor parameters are reset. Only then are possible unit changeovers made.
The units of all motor parameters are changed that are involved in the selection of IEC or NEMA (e.g. r0206, p0307, p0316, r0333, r0334, p0341, p0344, r1493, r1969).
Refer to: r0206, p0210, p0300, p0304, p0305, p0307, p0308, p0309, p0310, p0311, p0314, p0320, p0322, p0323, p0335, r0336, r0337, p1800

**Note:**
The parameter can only be changed for vector control (p0107).
The parameter value is not reset when the factory setting is restored (p0010 = 30, p0970).
### Parameters

#### List of parameters

**p0101[0...23]**  
**Drive object numbers / DO numbers**

- **CU_G130_DP,**  
- **CU_G130_PN,**  
- **CU_G150_DP,**  
- **CU_G150_PN**

<table>
<thead>
<tr>
<th><strong>Can be changed:</strong></th>
<th>C1(1)</th>
<th><strong>Calculated:</strong></th>
<th>-</th>
<th><strong>Access level:</strong></th>
<th>2</th>
</tr>
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<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16</td>
<td><strong>Dynamic index:</strong></td>
<td>-</td>
<td><strong>Func. diagram:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Topology</td>
<td><strong>Units group:</strong></td>
<td>-</td>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td><strong>Max</strong></td>
<td>-</td>
<td><strong>Factory setting</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
The parameter contains the object number via which every drive object can be addressed. The number of an existing drive object is entered into each index.

- **Value = 0:** No drive object is defined.

**Index:**
- **[0]** = Drive object number Control Unit
- **[1]** = Drive object number object 1
- **[2]** = Drive object number object 2
- **[3]** = Drive object number object 3
- **[4]** = Drive object number object 4
- **[5]** = Drive object number object 5
- **[6]** = Drive object number object 6
- **[7]** = Drive object number object 7
- **[8]** = Drive object number object 8
- **[9]** = Drive object number object 9
- **[10]** = Drive object number object 10
- **[11]** = Drive object number object 11
- **[12]** = Drive object number object 12
- **[13]** = Drive object number object 13
- **[14]** = Drive object number object 14
- **[15]** = Drive object number object 15
- **[16]** = Drive object number object 16
- **[17]** = Drive object number object 17
- **[18]** = Drive object number object 18
- **[19]** = Drive object number object 19
- **[20]** = Drive object number object 20
- **[21]** = Drive object number object 21
- **[22]** = Drive object number object 22
- **[23]** = Drive object number object 23

**Note:**
The numbers are automatically assigned once and can no longer be changed as long as the object has not been deleted.

In the commissioning software, this object number cannot be entered using the expert list, but is automatically assigned when inserting an object.

**r0102[0...1]**  
**Number of drive objects / DO count**

- **CU_G130_DP,**  
- **CU_G130_PN,**  
- **CU_G150_DP,**  
- **CU_G150_PN**

<table>
<thead>
<tr>
<th><strong>Can be changed:</strong></th>
<th>-</th>
<th><strong>Calculated:</strong></th>
<th>-</th>
<th><strong>Access level:</strong></th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16</td>
<td><strong>Dynamic index:</strong></td>
<td>-</td>
<td><strong>Func. diagram:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Topology</td>
<td><strong>Units group:</strong></td>
<td>-</td>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td><strong>Max</strong></td>
<td>-</td>
<td><strong>Factory setting</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the number of existing or existing and prepared drive objects.

**Index:**
- **[0]** = Existing drive objects
- **[1]** = Existing and prepared drive objects

**Dependency:**
Refer to: p0101

**Note:**
The numbers of the drive objects are in p0101.

- **Index 0:**
  Displays the number of drive objects that have already been set up.

- **Index 1:**
  Displays the number of drive objects that have already been set up and, in addition, the drive objects that still have to be set up.
### r0103 Application-specific view / Appl_spec view

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
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</tr>
<tr>
<td>Access level:</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>999</td>
</tr>
<tr>
<td>Max</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Description:
Displays the application-specific view of the individual drive object.

#### Dependency:
Refer to: p0107, r0107

#### Note:
In the non-volatile memory, the application-specific views are defined in files with the following structure:
PDxxxyyy.ACX
xxx: Application-specific view (p0103)
yyy: Type of drive object (p0107)
Example:
PD052011.ACX
--> "011" stands for the drive object, type SERVO
--> "052" is the number of the view for this drive object

### p0103[0...23] Application-specific view / Appl_spec view

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C1(2)</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Access level:</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>999</td>
<td>999</td>
</tr>
</tbody>
</table>

#### Description:
The application-specific view of an existing drive object is entered into each index.
The parameter cannot be changed.

#### Dependency:
Refer to: p0107, r0107

#### Note:
In the non-volatile memory, the application-specific views are defined in files with the following structure:
PDxxxyyy.ACX
xxx: Application-specific view (p0103)
yyy: Type of drive object (p0107)
Example:
PD052011.ACX
--> "011" stands for the drive object, type SERVO
--> "052" is the number of the view for this drive object

### p0105 Activate/de-activate drive object / DO act/deact

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Access level:</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Description:
Setting to activate/de-activate a drive object.

#### Value:
0: De-activate drive object
1: Activate drive object
2: Drive object, de-activate and not present

#### Recommend.:
After inserting all of the components of a drive object, before activating, first wait for Alarm A01316.

#### Dependency:
Refer to: r0106
Refer to: A01314, A01316

#### Caution:
When activating drive objects with the safety functions enabled, the following applies:
After reactivating, a warm restart (p0009 = 30, p0976 = 2, 3) or POWER ON should be carried out.

#### Notice:
The following applies when activating:
If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed.

#### Note:
Re value = 0, 2:
When a drive object is deactivated it no longer outputs any errors.
If value = 0:
All components of the drive object were completely commissioned and are deactivated using this value. They can be removed from the DRIVE-CLiQ without any error.
If value = 1:
All components of the drive object must be available for error-free operation.
If value = 2:
Components of a drive object in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.
For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

**p0105 Activate/de-activate drive object / DO act/deact**

| Description: | Setting to activate/de-activate a drive object. |
| Value:       | 0: De-activate drive object |
|             | 1: Activate drive object |
| Dependency:  | Refer to: r0106 |
| Notice:      | The following applies when activating: |
|             | If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed. |

**p0105 Activate/de-activate drive object / DO act/deact TM31**

| Description: | Setting to activate/de-activate a drive object. |
| Value:       | 0: De-activate drive object |
|             | 1: Activate drive object |
|             | 2: Drive object, de-activate and not present |
| Recommend.:  | After inserting all of the components of a drive object, before activating, first wait for Alarm A01316. |
| Dependency:  | Refer to: r0106 |
|             | Refer to: A01314, A01316 |
| Warning:     | A drive that is moved by simulating the inputs of a Terminal Module is brought to a standstill while this parameter is being changed over. |
| Notice:      | The following applies when activating: |
|             | If components are inserted for the first time and the appropriate drive object is activated, then the drive system is automatically booted. To do this, the pulses of all of the drive objects must be suppressed. |
| Note:        | Re value = 0, 2: |
|             | When a drive object is deactivated it no longer outputs any errors. |
|             | If value = 0: |
|             | All components of the drive object were completely commissioned and are deactivated using this value. They can be removed from the DRIVE-CLiQ without any error. |
|             | If value = 1: |
|             | All components of the drive object must be available for error-free operation. |
If value = 2:
Components of a drive object in a project generated offline and set to this value must never be inserted in the actual
topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.
For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to
set just one subset to this value.

<table>
<thead>
<tr>
<th>p0105</th>
<th>Activate/de-activate drive object / DO act/deact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Description: Setting to activate/de-activate a drive object.
Value:
0: De-activate drive object
1: Activate drive object
2: Drive object, de-activate and not present
Recommend.: After inserting all of the components of a drive object, before activating, first wait for Alarm A01316.
Dependency: Refer to: r0106
Refer to: A01314, A01316
Caution: TM54F can only be de-activated if all of the drives assigned to it via P10010 have been de-activated or safety on
the assigned drives has not be enabled.
When activating drive objects with the safety functions enabled, the following applies:
After reactivating, a warm restart (p0009 = 30, p0976 = 2, 3) or POWER ON should be carried out.
Notice: The following applies when activating:
If components are inserted for the first time and the appropriate drive object is activated, then the drive system is
automatically booted. To do this, the pulses of all of the drive objects must be suppressed.
Note: Re value = 0, 2:
When a drive object is deactivated it no longer outputs any errors.
If value = 0:
All components of the drive object were completely commissioned and are deactivated using this value. They can
be removed from the DRIVE-CLiQ without any error.
If value = 1:
All components of the drive object must be available for error-free operation.
If value = 2:
Components of a drive object in a project generated offline and set to this value must never be inserted in the actual
topology from the very start. This means that the components are marked to be bypassed in the DRIVE-CLiQ line.
For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to
set just one subset to this value.

<table>
<thead>
<tr>
<th>r0106</th>
<th>Drive object active/inactive / DO act/inact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Description: Displays the "active/inactive" state of a drive object.
Value:
0: Drive object inactive
1: Drive object active
Dependency: Refer to: p0105
### r0107 Drive object type / DO type

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>SINAMICS S</td>
</tr>
<tr>
<td>2</td>
<td>SINAMICS G</td>
</tr>
<tr>
<td>3</td>
<td>SINAMICS I</td>
</tr>
<tr>
<td>4</td>
<td>SINAMICS NX/CX32</td>
</tr>
<tr>
<td>5</td>
<td>SINAMICS GM</td>
</tr>
<tr>
<td>6</td>
<td>SINAMICS DC</td>
</tr>
<tr>
<td>7</td>
<td>SINAMICS GL</td>
</tr>
<tr>
<td>8</td>
<td>SINAMICS S110</td>
</tr>
<tr>
<td>9</td>
<td>ACTIVE INFEED CONTROL</td>
</tr>
<tr>
<td>10</td>
<td>SERVO</td>
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<tr>
<td>11</td>
<td>VECTOR</td>
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<tr>
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<td>VECTORMV</td>
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<tr>
<td>13</td>
<td>VECTORMV</td>
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<tr>
<td>14</td>
<td>VECTORGRL</td>
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<tr>
<td>15</td>
<td>VECTOR3P</td>
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<td>VECTORSL</td>
</tr>
<tr>
<td>17</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>18</td>
<td>VECTORM2C</td>
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<td>19</td>
<td>VECTORDM</td>
</tr>
<tr>
<td>20</td>
<td>SMART INFEED CONTROL</td>
</tr>
<tr>
<td>30</td>
<td>BASIC INFEED CONTROL</td>
</tr>
<tr>
<td>35</td>
<td>BRAKE MODULE M2C</td>
</tr>
<tr>
<td>40</td>
<td>ACTIVE INFEED CONTROL MV</td>
</tr>
<tr>
<td>41</td>
<td>BASIC INFEED CONTROL MV</td>
</tr>
<tr>
<td>42</td>
<td>ACTIVE INFEED CONTROL M2C</td>
</tr>
<tr>
<td>51</td>
<td>SINAMICS G120 230 (SingleDO-Drive which combines Device+Vector)</td>
</tr>
<tr>
<td>52</td>
<td>SINAMICSG120 240_2 (SingleDO-Drive which combines Device+Vector)</td>
</tr>
<tr>
<td>54</td>
<td>SINAMICSG120 G120D (SingleDO-Drive which combines Device+Vector)</td>
</tr>
<tr>
<td>70</td>
<td>HLA</td>
</tr>
<tr>
<td>100</td>
<td>TB30 (Terminal Board)</td>
</tr>
<tr>
<td>101</td>
<td>SINAMICS SL</td>
</tr>
<tr>
<td>102</td>
<td>SINAMICS MV</td>
</tr>
<tr>
<td>150</td>
<td>DRIVE-CLiQ Hub Module</td>
</tr>
<tr>
<td>200</td>
<td>TM31 (Terminal Module)</td>
</tr>
<tr>
<td>201</td>
<td>TM41 (Terminal Module)</td>
</tr>
<tr>
<td>202</td>
<td>TM17 High Feature (Terminal Module)</td>
</tr>
<tr>
<td>203</td>
<td>TM15 (Terminal Module)</td>
</tr>
<tr>
<td>204</td>
<td>TM15 (Terminal Module for SINAMICS)</td>
</tr>
<tr>
<td>205</td>
<td>TM54F - Master (Terminal Module)</td>
</tr>
<tr>
<td>206</td>
<td>TM54F - Slave (Terminal Module)</td>
</tr>
<tr>
<td>207</td>
<td>TM120 (Terminal Module)</td>
</tr>
<tr>
<td>208</td>
<td>TM150 (Terminal Module)</td>
</tr>
<tr>
<td>254</td>
<td>CU-LINK</td>
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<tr>
<td>300</td>
<td>ENCODER</td>
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<tr>
<td>600</td>
<td>SINAMICS V60-G2 V80-G2</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0103, r0103
### List of parameters

#### p0107[0...23] Drive object type / DO type

<table>
<thead>
<tr>
<th>Drive object type / DO type</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C1(2)</td>
<td>The type of an existing drive object is entered into each index.</td>
<td>0: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Value: 0: -</td>
<td>1: SINAMICS S</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>2: SINAMICS G</td>
<td>3: SINAMICS I</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>4: SINAMICS NX/CX32</td>
<td>5: SINAMICS GM</td>
</tr>
<tr>
<td>Min</td>
<td>6: SINAMICS DC</td>
<td>7: SINAMICS GL</td>
</tr>
<tr>
<td>Max</td>
<td>9: SINAMICS S110</td>
<td>10: ACTIVE INFEED CONTROL</td>
</tr>
<tr>
<td>Factory setting</td>
<td>11: SERVO</td>
<td>12: VECTOR</td>
</tr>
<tr>
<td></td>
<td>13: VECTORMV</td>
<td>14: VECTORGL</td>
</tr>
<tr>
<td></td>
<td>15: VECTOR3P</td>
<td>16: VECTORSL</td>
</tr>
<tr>
<td></td>
<td>17: DC_CTRL</td>
<td>18: VECTORM2C</td>
</tr>
<tr>
<td></td>
<td>19: VECTORDM</td>
<td>20: SMART INFEED CONTROL</td>
</tr>
<tr>
<td></td>
<td>21: SMART INFEED CONTROL</td>
<td>22: BRAKE MODULE M2C</td>
</tr>
<tr>
<td></td>
<td>23: BRAKE MODULE M2C</td>
<td>24: ACTIVE INFEED CONTROL MV</td>
</tr>
<tr>
<td></td>
<td>25: ACTIVE INFEED CONTROL MV</td>
<td>26: ACTIVE INFEED CONTROL MV</td>
</tr>
<tr>
<td></td>
<td>27: SINAMICS G120 230 (SingleDO-Drive which combines Device+Vector)</td>
<td>28: SINAMICSG120 240_2 (SingleDO-Drive which combines Device+Vector)</td>
</tr>
<tr>
<td></td>
<td>29: SINAMICSG120 G120D (SingleDO-Drive which combines Device+Vector)</td>
<td>30: HLA</td>
</tr>
<tr>
<td></td>
<td>31: TB30 (Terminal Board)</td>
<td>32: SINAMICS SL</td>
</tr>
<tr>
<td></td>
<td>33: SINAMICS MV</td>
<td>150: DRIVE-CLiQ Hub Module</td>
</tr>
<tr>
<td></td>
<td>200: TM31 (Terminal Module)</td>
<td>201: TM41 (Terminal Module)</td>
</tr>
<tr>
<td></td>
<td>202: TM17 High Feature (Terminal Module)</td>
<td>203: TM15 (Terminal Module)</td>
</tr>
<tr>
<td></td>
<td>204: TM15 (Terminal Module for SINAMICS)</td>
<td>205: TM54F - Master (Terminal Module)</td>
</tr>
<tr>
<td></td>
<td>206: TM54F - Slave (Terminal Module)</td>
<td>207: TM120 (Terminal Module)</td>
</tr>
<tr>
<td></td>
<td>208: TM150 (Terminal Module)</td>
<td>254: CU-LINK</td>
</tr>
<tr>
<td></td>
<td>300: ENCODER</td>
<td>600: SINAMICS V60-G2 V80-G2</td>
</tr>
<tr>
<td></td>
<td>0 = Drive object type, Control Unit</td>
<td>1 = Drive object type, object 1</td>
</tr>
<tr>
<td></td>
<td>2 = Drive object type, object 2</td>
<td>3 = Drive object type, object 3</td>
</tr>
<tr>
<td></td>
<td>4 = Drive object type, object 4</td>
<td>5 = Drive object type, object 5</td>
</tr>
<tr>
<td></td>
<td>6 = Drive object type, object 6</td>
<td></td>
</tr>
</tbody>
</table>
Parameters
List of parameters

[7] = Drive object type, object 7
[8] = Drive object type, object 8
[9] = Drive object type, object 9
[10] = Drive object type, object 10
[12] = Drive object type, object 12
[13] = Drive object type, object 13
[14] = Drive object type, object 14
[15] = Drive object type, object 15
[16] = Drive object type, object 16
[17] = Drive object type, object 17
[18] = Drive object type, object 18
[19] = Drive object type, object 19
[20] = Drive object type, object 20
[21] = Drive object type, object 21
[22] = Drive object type, object 22
[23] = Drive object type, object 23

Dependency:
Refer to: p0103, r0103

Caution:
If you change this parameter and exit the device commissioning mode, then the complete software will be set up again and all of the previous drive parameter settings are deleted.

Note:
The number (p0101) and the associated drive object type are in the same index.
For SINAMICS S a drive object type can only be changed between SERVO and VECTOR. If you change the parameter and exit drive start-up (p0009 from 2 to 0) the drive parameters are set up again.

r0108 Drive objects, function module / DO function module

B_INF
Can be changed: -
Data type: Unsigned32
P-Group: Closed-loop control
Not for motor type: -
Min Max
- -
Access level: 2
Func. diagram: -
Unit selection: -

Description:
Displays the activated function module for the particular drive object.

Bit field:
Bit Signal name 1 signal 0 signal FP
15 Parallel connection / Parallel Activated Not activated -
18 Free function blocks / FBLOCKS Activated Not activated -
26 Braking Module external / Brk Mod ext Activated Not activated -
28 Cooling unit / Cool_unit Activated Not activated -
31 PROFINET / PROFINET Activated Not activated -

Note:
A "function module" is a functional expansion of a drive object that can be activated when commissioning.

p0108[0...23] Drive objects, function module / DO function module

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: C1(2)
Data type: Unsigned32
P-Group: -
Not for motor type: -
Min Max
- -
Access level: 2
Func. diagram: -
Unit selection: -
Scaling: -
Expert list: 1
0000 0000 0000 0000 0000 0000 0000 0000 bin

Description:
The function module of an existing drive object is entered into each index (see p0101, p0107).
The following bits are available for the Control Unit (Index 0):

Bit 18: Free function blocks
Bit 20: CAN
Bit 30: COMM BOARD
Bit 31: PROFINET
For all other drive objects (Index > 0), the significance of the bits should be taken from the display parameters r0108 of the drive object.

**Index:**

- [0] = Function module Control Unit
- [1] = Function module object 1
- [2] = Function module object 2
- [3] = Function module object 3
- [4] = Function module object 4
- [5] = Function module object 5
- [6] = Function module object 6
- [7] = Function module object 7
- [8] = Function module object 8
- [9] = Function module object 9
- [10] = Function module object 10
- [12] = Function module object 12
- [13] = Function module object 13
- [14] = Function module object 14
- [15] = Function module object 15
- [16] = Function module object 16
- [17] = Function module object 17
- [18] = Function module object 18
- [19] = Function module object 19
- [20] = Function module object 20
- [21] = Function module object 21
- [22] = Function module object 22
- [23] = Function module object 23

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
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<td>OFF</td>
<td>-</td>
</tr>
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<td>Bit 13</td>
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<td>Bit 14</td>
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<td>-</td>
</tr>
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<td>20</td>
<td>Bit 20</td>
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</tr>
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<td>Bit 21</td>
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<td>22</td>
<td>Bit 22</td>
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<td>OFF</td>
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<td>Bit 23</td>
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<td>OFF</td>
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<td>Bit 25</td>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Bit 28</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Bit 29</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<td>30</td>
<td>Bit 30</td>
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</tr>
<tr>
<td>31</td>
<td>Bit 31</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

A "function module" is a functional expansion of a drive object that can be activated when commissioning.
Parameters

List of parameters

---

**r0108 Drive objects, function module / DO function module**

ENC

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
</table>

- Data type: Unsigned32
- Dynamic index: -
- Units group: -
- Unit selection: -

- P-Group: Closed-loop control
- Not for motor type: -

- Min: Max
- Factory setting: -

**Description:** Displays the activated function module for the particular drive object.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name 1</th>
<th>Signal 0</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Linear encoder / Lin_enc</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>18</td>
<td>Free function blocks / FBLOCKS</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>31</td>
<td>PROFINET / PROFINET</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
</tbody>
</table>

**Note:** A "function module" is a functional expansion of a drive object that can be activated when commissioning.

---

**r0108 Drive objects, function module / DO function module**

TB30, TM150, TM31

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
</table>

- Data type: Unsigned32
- Dynamic index: -
- Units group: -
- Unit selection: -

- P-Group: Closed-loop control
- Not for motor type: -

- Min: Max
- Factory setting: -

**Description:** Displays the activated function module for the particular drive object.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name 1</th>
<th>Signal 0</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Free function blocks / FBLOCKS</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>31</td>
<td>PROFINET / PROFINET</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
</tbody>
</table>

**Note:** A "function module" is a functional expansion of a drive object that can be activated when commissioning.

---

**r0108 Drive objects, function module / DO function module**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
</table>

- Data type: Unsigned32
- Dynamic index: -
- Units group: -
- Unit selection: -

- P-Group: Closed-loop control
- Not for motor type: -

- Min: Max
- Factory setting: -

**Description:** Displays the activated function module for the particular drive object.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name 1</th>
<th>Signal 0</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>Closed-loop speed/torque control / n/M</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>08</td>
<td>Extended setpoint channel / Extended set</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>13</td>
<td>Safety rotary axis / Safety rot</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>14</td>
<td>Extended brake control / Extended brk</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>15</td>
<td>Parallel connection / Parallel</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>16</td>
<td>Technology controller / Tech_ctrl</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>17</td>
<td>Extended messages/monitoring / Ext msg</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>18</td>
<td>Free function blocks / FBLOCKS</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>20</td>
<td>Software gating unit / SW_gating unit</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>24</td>
<td>PM330 / PM330</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>28</td>
<td>Cooling unit / Cool_unit</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>29</td>
<td>CAN / CAN</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
<tr>
<td>31</td>
<td>PROFINET / PROFINET</td>
<td>Activated</td>
<td>Not activated</td>
</tr>
</tbody>
</table>

**Note:** A "function module" is a functional expansion of a drive object that can be activated when commissioning.

The following bits are only automatically set, if the power units are detected with the appropriate properties.

- Bit 16: Parallel connection of the same power units (only automatically set for G150/G130).
- Bit 20: Software gating unit (only automatically set when power units are connected in parallel).
- Bit 24: Type PM330 power units are presently not supported.
Bit 26: Type PM250 power units with F3E energy recovery are only supported for S120 CRANES.
Bit 28: Power units with liquid cooling.

### r0110[0...2] Basic sampling times / t_basis

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the basic sampling times.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Basic sampling time 0
- [1] = Basic sampling time 1
- [2] = Basic sampling time 2

### r0111 Basic sampling time selection / t_basis sel

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the selected basic sampling time for this drive object.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r0110

### r0111 Basic sampling time selection / t_basis sel

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the selected basic sampling time for this drive object.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r0110

**Note:**
For TB30 and the Terminal Module, this parameter has no significance.
For TB30 and certain Terminal Modules, the sampling times can be set using p4099 (see description of p4099 for the Module in question).

### p0112 Sampling times pre-setting p0115 / t_sample for p0115

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-assignment of the sampling times in p0115.</td>
<td>C1(3)</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>The clock cycles for the current controller / speed controller / flux controller / setpoint channel / position controller / positioning / technology controller are pre-assigned as follows:</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters
List of parameters

SINAMICS S, servo drive:
  p0112 = 1: 250 / 250 / 250 / 4000 / 2000 / 8000 / 4000 µs (for chassis units)
  p0112 = 2: 125 / 250 / 250 / 4000 / 2000 / 8000 / 4000 µs
  p0112 = 3: 125 / 125 / 125 / 4000 / 1000 / 4000 / 4000 µs
  p0112 = 4: 62.5 / 62.5 / 62.5 / 1000 / 1000 / 2000 / 1000 µs
  p0112 = 5: 31.25 / 31.25 / 31.25 / 1000 / 1000 / 2000 / 1000 µs
SINAMICS S, Active Infeed (p0112 = 1 not for p0092 = 1):
  p0112 = 1: 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)
  p0112 = 2: 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)
  p0112 = 3: 125 / - / - / 2000 µs
  p0112 = 4: 125 / - / - / 1000 µs
  p0112 = 5: 125 / - / - / 500 µs
SINAMICS S, Smart Infeed (p0112 = 1 not for p0092 = 1):
  p0112 = 1: 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)
  p0112 = 2: 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)
  p0112 = 3: 125 / - / - / 2000 µs
  p0112 = 4: 125 / - / - / 1000 µs
  p0112 = 5: Not possible
SINAMICS S, Basic Infeed, booksize:
SINAMICS S, Basic Infeed, chassis:
  p0112 = 2: 2000 / - / - / 2000 µs (pre-setting)
  p0112 = 4: Not possible
  p0112 = 5: Not possible
SINAMICS S/G, vector drive (p0112 = 1 not for p0092 = 1 and not for PM340):
  p0112 = 1: 400 / 1600 / 1600 / 3200 / 3200 / 3200 µs (for rated pulse frequency = 1.25, 2.5 kHz)
  p0112 = 2: 250 / 1000 / 2000 / 1000 / 2000 / 4000 / 4000 µs
  p0112 = 3: 250 / 1000 / 1000 / 2000 / 4000 / 4000 µs (for rated pulse frequency = 2.0, 4.0 kHz)
SINAMICS S, vector drive:
  p0112 = 5: 250 / 250 / 1000 / 500 / 1000 / 2000 / 1000 µs

Value:
  0: Expert
  1: xLow
  2: Low
  3: Standard
  4: High
  5: xHigh

Recommend.:
When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

Dependency:
It is prohibited to select a parameter value from p0112 if the associated current controller clock cycle cannot set (e.g. p0112 = 1 is not possible for a vector drive and PM340 power unit).
If, for a servo drive, p112 = 5 is set, then the pulse frequency p1800 is preassigned 8 kHz. For D410-2 and vector drive, the current controller sampling time can only be permanently changed for p0112 = 0.
Refer to: p0092

Note:
For p0112 = 0 (expert) the individual sampling times in p0115 can be adjusted.
The setting p0112 = 1 cannot be set for a vector drive with power unit type PM340 (refer to r0203).
### List of parameters

**Description:**
Pre-assignment of the sampling times in p0115.

The clock cycles for the current controller / speed controller / flux controller / setpoint channel / position controller / positioning / technology controller are pre-assigned as follows:

**SINAMICS S, servo drive:**
- **p0112 = 1:** 250 / 250 / 250 / 4000 / 2000 / 8000 / 4000 µs (for chassis units)
- **p0112 = 2:** 125 / 125 / 250 / 4000 / 2000 / 8000 / 4000 µs
- **p0112 = 3:** 125 / 125 / 125 / 1000 / 4000 / 4000 µs
- **p0112 = 4:** 62.5 / 62.5 / 1000 / 4000 / 1000 / 2000 / 1000 µs
- **p0112 = 5:** 31.25 / 31.25 / 31.25 / 1000 / 1000 / 2000 / 1000 µs

**SINAMICS S, Active Infeed (p0112 = 1 not for p0092 = 1):**
- **p0112 = 1:** 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)
- **p0112 = 2:** 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)
- **p0112 = 3:** 250 / - / - / 2000 µs
- **p0112 = 4:** 250 / - / - / 1000 µs
- **p0112 = 5:** Not possible

**SINAMICS S, Smart Infeed (p0112 = 1 not for p0092 = 1):**
- **p0112 = 1:** 400 / - / - / 1600 µs (pre-setting for the rated pulse frequency = 2.5 kHz)
- **p0112 = 2:** 250 / - / - / 2000 µs (pre-setting for the rated pulse frequency = 4.0 kHz)
- **p0112 = 3:** 250 / - / - / 2000 µs
- **p0112 = 4:** 250 / - / - / 1000 µs
- **p0112 = 5:** Not possible

**SINAMICS S, Basic Infeed, booksize:**
- **p0112 = 4:** 250 / - / - / 2000 µs

**SINAMICS S, Basic Infeed, chassis:**
- **p0112 = 1:** 2000 / - / - / 2000 µs
- **p0112 = 2:** 2000 / - / - / 2000 µs (pre-setting)
- **p0112 = 3:** 2000 / - / - / 2000 µs
- **p0112 = 4:** Not possible
- **p0112 = 5:** Not possible

**SINAMICS S/G, vector drive (p0112 = 1 not for p0092 = 1 and not for PM340):**
- **p0112 = 1:** 400 / 1600 / 1600 / 1600 / 3200 / 3200 / 3200 µs (for rated pulse frequency = 1.25, 2.5 kHz)
- **p0112 = 2:** 250 / 1000 / 2000 / 2000 / 4000 / 4000 / 4000 µs
- **p0112 = 3:** 250 / 1000 / 1000 / 1000 / 2000 / 4000 / 4000 µs (for rated pulse frequency = 2.0, 4.0 kHz)

**Value:**
- **Expert**
- **xLow**
- **Low**
- **Standard**

**Recommend.:**
When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

**Dependency:**
It is prohibited to select a parameter value from p0112 if the associated current controller clock cycle cannot set (e.g. p0112 = 1 is not possible for a vector drive and PM340 power unit).
If, for a servo drive, \( p112 = 5 \) is set, then the pulse frequency \( p1800 \) is preassigned 8 kHz. For D410-2 and vector drive, the current controller sampling time can only be permanently changed for \( p0112 = 0 \).

Refer to: \( p0092 \)

**Note:**
For \( p0112 = 0 \) (expert) the individual sampling times in \( p0115 \) can be adjusted. The setting \( p0112 = 1 \) cannot be set for a vector drive with power unit type PM340 (refer to \( r0203 \)).

---

### p0113 Minimum pulse frequency, selection / \( f_{puls \ min \ sel} \)

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1.000 [kHz]</td>
<td>2.000 [kHz]</td>
<td>2.000 [kHz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The current controller sampling time (\( p0115[0] \)) is pre-assigned by selecting the minimum pulse frequency.

**Dependency:**
The parameter can only be changed with \( p0112 = 0 \) (expert). For isochronous operation (\( p0092 = 1 \)) the parameter can only be set so that a current controller clock cycle of 125 µs is obtained as an integer number.

The required pulse frequency can be set in \( p1800 \) after commissioning (\( p0009 = p0010 = 0 \)).

Refer to: \( p0112, r0114, p0115, p1800 \)

**Note:**
The current controller sampling time (\( p0115[0] \)) is set to the inverse value of twice the minimum pulse frequency.

For \( p0113 = 1.0 \) kHz, \( p0115[0] = 500 \) µs is set, for \( p0113 = 2.0 \) kHz, \( p0115[0] = 250 \) µs is set. The current controller sampling time (\( p0115[0] \)), calculated from the pulse frequency, is set in a grid of 1.25 µs.

For a power unit type PM340 (refer to \( r0203 \)), only the values 1.0 and 2.0 kHz can be set. 1.0 kHz can be set in order to achieve a current controller clock cycle of 500µs. However, in this case, the minimum pulse frequency \( p1800 \) is limited to 2 kHz.

---

### r0114[0...9] Minimum pulse frequency, recommended / \( f_{puls \ min \ recom} \)

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [kHz]</td>
<td>- [kHz]</td>
<td>- [kHz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the recommended values (indices 0 and 1) for the minimum pulse frequency (\( p0113 \)).

If the system rejects a change to \( p0113 \) because the value to be used lies outside the permitted value range, then instead the recommended value from \( r0114 \) can be used.

**Index:**
0 = If only the actual drive is changed
1 = If all drives connected to the DRIVE-CLiQ line are changed
2 = 2. possible pulse frequency
3 = 3. possible pulse frequency
4 = 4. possible pulse frequency
5 = 5. possible pulse frequency
6 = 6. possible pulse frequency
7 = 7. possible pulse frequency
8 = 8. possible pulse frequency
9 = 9. possible pulse frequency

**Dependency:**
Refer to: \( p0113 \)

**Note:**
After exiting commissioning (\( p0009 = p0010 = 0 \)), the pulse frequencies calculated from the sampling time \( p115[0] \) are displayed in indices 1 to 9. If additional restrictions do not apply (e.g. due to having selected an output filter), these can be entered into \( p1800 \). The maximum pulse frequency of the power units was already taken into account in \( r0114 \).

A value of 0 kHz does not define a recommended pulse frequency.
Description:
Sets the sampling times for the control loops.
The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

Recommend.:
When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.

Index:

- [0] = Current controller
- [1] = Speed controller
- [2] = Flux controller
- [3] = Setpoint channel
- [4] = Pos controller
- [5] = Positioning
- [6] = Technology controller

Dependency:
The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.
Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number). The sampling time of the speed controller (p0115[1]) can have as a maximum a value of 800% of the current controller sampling time (p0115[0]).
For servo drives, the maximum sampling time of the current controller is 250 µs and for vector drives, 500 µs.
The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).
Refer to: r0110, r0111, p0112

Note:
For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.
For the Active Line Module (ALM) and Smart Line Module (SLM), the current and DC link voltage controllers operate with the same sampling time. For ALM/SLM the maximum current controller clock cycle is 400 µs.
For the Basic Line Module (BLM), the DC link voltage measurement operates in the current controller sampling time.
For BLM booksiz, only the current controller sampling time of 250 µs is permitted. For BLM chassis, only the current controller sampling time of 2000 µs is permitted.
For power unit type PM340 (r0203), only current controller sampling times of 62.5 µs, 125 µs, 250 µs and 500 µs can be set. The maximum current controller clock cycle for servo drives and the minimum current controller clock cycle for vector drives is 250 µs.
If sampling times in p0115 are individually changed for p0112 = 0 (expert) then it must always be observed that the selected sampling times of the setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) are always greater than or equal to twice the current controller sampling time (p0115[0]).
### Parameters

#### List of parameters

**p0115[0]**  
**Sampling time for supplementary functions / t_samp suppl_fct**

<table>
<thead>
<tr>
<th>Object</th>
<th>Can be changed</th>
<th>Data type</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>C1(3)</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.00 [µs]</td>
<td>16000.00 [µs]</td>
<td>4000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the basic sampling time for supplementary functions (DCC, free function blocks) on this object.

Only setting values that are an integer multiple of 125 µs are permissible.

**Index:**
[0] = Basic sampling time

---

**p0115[0]**  
**Sampling time for speed detection / t_sample n_det**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed</th>
<th>Data type</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C1(3)</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>125.00 [µs]</td>
<td>500.00 [µs]</td>
<td>125.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the sampling times for speed detection.

**Index:**
[0] = Basic sampling time

---

**p0115[0]**  
**Sampling time for supplementary functions / t_samp suppl_fct**

<table>
<thead>
<tr>
<th>Object</th>
<th>Can be changed</th>
<th>Data type</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB30, TM150, TM31</td>
<td>C1(3)</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.00 [µs]</td>
<td>16000.00 [µs]</td>
<td>4000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the sampling times for supplementary functions (DCC, free function blocks) on this object.

Only setting values that are an integer multiple of 125 µs are permissible.

**Index:**
[0] = Basic sampling time

**Note:**
This parameter only applies to set the sampling times of possible supplementary functions. The sampling times for inputs/outputs must be set in p4099.

---

**p0115[0...6]**  
**Sampling times for internal control loops / t_sample int ctrl**

<table>
<thead>
<tr>
<th>Object</th>
<th>Can be changed</th>
<th>Data type</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>C1(3)</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.00 [µs]</td>
<td>16000.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the sampling times for the control loops.

The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

**Recommend:**
When changing the sampling times of the current and speed controllers (also refer to p0115), then we recommend that after exiting commissioning (p0009 = 0) the controller settings are re-calculated using p0340 = 4.
When adjusting the current controller sampling time, it is recommended to use values that are an integer multiple of 6.25 µs. The sampling times of analog or digital inputs/outputs (see p0799, p4099) should be set to an integer multiple of the current controller sampling time.

If the current controller sampling time is to be reduced with respect to the default setting (e.g. < 250 µs), then it is recommended that the motor data identification (standstill measurement) is executed beforehand, in order to avoid a thermal overload of the power unit as a result of high pulse frequencies (p1800).

Index:

- [0] = Current controller
- [1] = Speed controller
- [2] = Flux controller
- [3] = Setpoint channel
- [4] = Pos controller
- [5] = Positioning
- [6] = Technology controller

Dependency:

Depending on the number and type of vector drives, the sampling times are preset differently.

The sampling times can only be separately set if p0112 is 0 (expert). If a sampling time is modified in the expert mode, then all of the sampling times with higher indices are automatically changed in the same ratio as the sampling time itself was changed. Slower time slices are only taken if the calculated sampling time is also permitted. Upper limit is 8 ms.

Higher-level controls must be calculated in integral ratios to lower-level controls (e.g. p0115[1] = N * p0115[0]; where N is an integer number). The sampling time of the speed controller (p0115[1]) can have as a maximum a value of 800% of the current controller sampling time (p0115[0]).

The sampling times for setpoint channel (p0115[3]), position controller (p0115[4]), positioning (p0115[5]) and technology controller (p0115[6]) must have at least 2x the value of the current controller sampling time (p0115[0]).

The sampling time of the current controller p0115[0] and pulse frequency p1800 are checked at each parameter download, and when necessary changed, if, for p0092 = 1, the current controller clock cycle is not an integral multiple of 125 µs or if p0112 is set > 1. For p0092 = 0, the check with p0112 = 0 (= expert) can be deactivated.

Refer to: r0110, r0111, p0112

Note:

For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.

For power unit type PM340 (r0203), only current controller sampling times of 250 µs or 500 µs can be set. The minimum current controller clock cycle is otherwise 125 µs (SINAMICS G: 250 µs), the maximum current controller clock cycle is 500 µs. The minimum speed controller clock cycle for SINAMICS G is 1 ms.

Current controller clock cycles less than 250 µs are restricted by the number of drives or by the number of power units connected in parallel (also see F01340).

For chassis power units connected in parallel, it is recommended to connect the DRIVE-CLiQ cables (partially) in parallel between the Control Unit and the individual Motor Modules.

For D410-2, the current controller sampling times can only be permanently changed with p0112 = 0 (e.g. to 250 µs).

**r0116[0...1]**

**Drive object clock cycle recommended / DO_clock recom**

| Can be changed: | Calculated: | Access level: 3 |
| Data type: | Dynamic index: | Func. diagram: |
| P-Group: | Units group: | Unit selection: |
| Not for motor type: | Scaling: | Expert list: 1 |

**Description:**

Displays the recommended sampling time for the drive objects.

r00116[0] = recommended sampling time:

Recommended value which would then make the complete system operational.

r00116[1] = recommended sampling time:

Recommended value, which after changing other clock cycles on the DRIVE-CLiQ line, would result in an operational system.

**Index:**

- [0] = Change only for the actual drive object
- [1] = Changing all objects on the DRIVE-CLiQ line

**Dependency:**

Refer to: p0115
Parameters
List of parameters

### p0117

**Current controller computing dead time mode / I_ctrl t_dead mode**

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode for the computing dead time of the current controller.

0: Offset (shifted) clocking, minimum computing dead time of each drive, automatic setting
1: Clocking at the same time, the dead time aligns itself to the dead time of the latest drive, automatic setting
2: Manual setting of the computing dead time, early transfer
3: Manual setting of the computing dead time, late transfer
4-6: As for 0-2, however, no early transfers are set for vectors

**Dependency:**
Refer to: p0118
Refer to: A02100

**Note:**
The mode change is not effective until the drive unit is powered up again.
Re p0117 = 0:
The times when the setpoints become effective for the individual controls is automatically and individually determined. Another computing dead time is set for each control (closed-loop) (p0118). Current is impressed for the individual controls without any offset with respect to time (improved EMC compatibility).
Re p0117 = 1:
The latest closed-loop control determines when the setpoints for each of the individual controls become active. The same computing dead time is set for each control (p0118). Current is impressed (flows) for the individual controls without any offset with respect to time.
Re p0117 = 2:
The computing dead time is manually set. The user must optimize the value in p0118.
Re p0117 = 3:
The computing dead time is manually set. The user must optimize the value in p0118.
Re p0117 = 4 ... 6:
Behavior as for p0117 = 0 ... 2, however for vectors, the earliest times are not determined.

### p0118

**Current controller computing dead time / I_ctrl t_dead**

<table>
<thead>
<tr>
<th>B_INF, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:**
This parameter is pre-set as a function of the current controller sampling time (p0115[0]) and normally does not have to be changed.

**Dependency:**
Refer to: p0117
Refer to: A02100

**Note:**
For p0118 <= 0.005 µs, the current controller output is delayed by a complete current controller clock cycle (p0115[0]).
After p0118 has been changed, we recommend that the current controller is adapted (p1715).
### p0120  Number of Power unit Data Sets (PDS) / PDS count

| Description: | Sets the number of Power unit Data Sets (PDS). The value corresponds to the number of power units connected together for a parallel circuit configuration. |
| Dependency: | Refer to: p0107, r0107 |
| Note: | This parameter is only significant for drive objects A_INFEED and VECTOR with a parallel circuit configuration. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0121[0...n]  Power unit component number / PU comp_no

| Description: | The power unit data set is assigned to a power unit using this parameter. This unique component number is assigned when parameterizing the topology. Only component numbers can be entered into this parameter that correspond to a power unit. |
| Dependency: | Refer to: p0107, r0107 |
| Note: | For parallel circuit configurations, the parameter index is assigned to a power unit. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed: C1(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dynamic index: PDS, p0120</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>199</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0124[0...23]  Power unit detection via LED / PU detection LED

| Description: | Detects the power unit assigned to this drive and data set. |
| Note: | While p0124 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate power unit. For parallel circuit configurations, the parameter index is assigned to a power unit. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dynamic index: PDS, p0120</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Converter</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0124[0...23]  Main component detection using LED / M_comp detect LED

| Description: | Detection of the main components of the drive object selected via the index. |

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### p0125[0...n] Activate/de-activate power unit components / PU_comp act/deact

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0125[0...n]</td>
<td>Setting to activate/deactivate a power unit component.</td>
<td>0: De-activate component&lt;br&gt;1: Activate component&lt;br&gt;2: Component, de-activate and not present</td>
<td>After inserting a component, before activating, first wait for Alarm A01317.</td>
<td>For a parallel connection, the following applies: When deactivating individual power units using p0125, it is not permissible that the power units of the parallel connection involved are connected. Infeed units should be disconnected from the line supply (for example, using a contactor). Motor feeder cables should be disconnected. In addition, defective power units should be disconnected from the DC link.</td>
<td>It is not permissible to de-activate drive objects with safety functions enabled. The activation of a component can be rejected if the component was inserted for the first time. In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited. For units connected in parallel, when one of the power units is de-activated, then the enable in p7001 is withdrawn. Re value = 0, 2: When a component is deactivated it no longer outputs any errors. If value = 0: The component was completely commissioned and is deactivated using this value. It can be removed from the DRIVE-CLiQ without any error. If value = 1: The component must be available for error-free operation. If value = 2: A component in a project generated offline and set to this value must never be inserted in the actual topology from the very start. This means that the component is marked to be bypassed in the DRIVE-CLiQ line. For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.</td>
</tr>
</tbody>
</table>

#### Parameter Details

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0125[0...n]</td>
<td>Integer16</td>
<td>2</td>
<td>Setting to activate/deactivate a power unit component.</td>
<td>0: De-activate component&lt;br&gt;1: Activate component&lt;br&gt;2: Component, de-activate and not present</td>
</tr>
</tbody>
</table>

### r0126[0...n] Power unit components active/inactive / PU comp act/inact

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0126[0...n]</td>
<td>Displays the &quot;active/inactive&quot; state of a power unit component.</td>
<td>0: Component inactive&lt;br&gt;1: Component active</td>
<td>Refer to: p0105, p0125, p0897</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Parameter Details

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0126[0...n]</td>
<td>Integer16</td>
<td>2</td>
<td>Displays the &quot;active/inactive&quot; state of a power unit component.</td>
<td>0: Component inactive&lt;br&gt;1: Component active</td>
</tr>
</tbody>
</table>
### r0127[0...n] Power unit version EPROM data / PU EPROM version

<table>
<thead>
<tr>
<th>B_INF, VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: PDS, p0120</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Converter</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the version of the EPROM data of the power unit.

**Dependency:** Refer to: r0147, r0157

**Note:** For parallel circuit configurations, the parameter index is assigned to a power unit.

### r0128[0...n] Power unit, firmware version / PU FW version

<table>
<thead>
<tr>
<th>B_INF, VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: PDS, p0120</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Converter</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the firmware version of the power unit.

**Dependency:** Refer to: r0018, r0148, r0158, r0197, r0198

**Note:** Example:
The value 1010100 should be interpreted as V01.01.01.00.

For parallel circuit configurations, the parameter index is assigned to a power unit.

### p0130 Number of Motor Data Sets (MDS) / MDS count

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 8575</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>16</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the number of Motor Data Sets (MDS).

### p0131[0...n] Motor component number / Mot comp_no

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C1(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>199</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** The motor data set is assigned to a motor using this parameter.

This unique component number is assigned when parameterizing the topology.

Only component numbers can be entered into this parameter that correspond to a motor.
### p0139[0...2] Copy Motor Data Set MDS / Copy MDS

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td>Copying a Motor Data Set (MDS) into another.</td>
<td>C2(15)</td>
<td>-</td>
<td>2</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>31</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**

Copying a Motor Data Set (MDS) into another.

**Index:**

- [0] = Source motor data set
- [1] = Target motor data set
- [2] = Start copying procedure

**Note:**

Procedure:

1. In Index 0, enter which motor data set should be copied.
2. In Index 1, enter the motor data set data that is to be copied into.
3. Start copying: Set index 2 from 0 to 1.

p0139[2] is automatically set to 0 when copying is completed.

When copying, p0131 is not taken into account.

### p0140 Number of Encoder Data Sets (EDS) / EDS count

**ENC**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENC</strong></td>
<td>Sets the number of Encoder Data Sets (EDS).</td>
<td>C1(3)</td>
<td>-</td>
<td>2</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**

Sets the number of Encoder Data Sets (EDS).

**Note:**

When parameterizing the drive with "no encoder" there must be at least one encoder data set (p0140 >= 1).

### p0140 Number of Encoder Data Sets (EDS) / EDS count

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td>Sets the number of Encoder Data Sets (EDS).</td>
<td>C1(3)</td>
<td>-</td>
<td>2</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**

Sets the number of Encoder Data Sets (EDS).

**Note:**

When parameterizing the drive with "no encoder" there must be at least one encoder data set (p0140 >= 1).

### p0141[0...n] Encoder interface (Sensor Module) component number / Enc_interf comp_no

**ENC, VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| **ENC, VECTOR_G** | This parameter is used to assign the encoder data set to an encoder evaluation (e.g. SMC). This unique component number is assigned when parameterizing the topology. Only component numbers can be entered into this parameter that correspond to an encoder evaluation. **Note:**

If the encoder evaluation and encoder are integrated (motor with DRIVE-CLIQ), then their component numbers are identical. For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142). | C1(4)          | -          | 3            | Unsigned8        | EDS, p0140     | -             | -           | -              | -           | 0   | 199 | 0               |
### p0142[0...n] Encoder component number / Encoder comp_no

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C1(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: EDS, p0140</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>199</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
This parameter is used to assign the encoder data set to an encoder. This assignment is made using the unique component number that was assigned when parameterizing the topology. Only component numbers can be entered into this parameter that correspond to an encoder.

**Note:**
If the encoder evaluation and encoder are integrated (motor with DRIVE-CLiQ), then their component numbers are identical. For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142).

### p0144[0...n] Sensor Module detection via LED / SM detection LED

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: EDS, p0140</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Detects the Sensor Module assigned to this drive and data set.

**Note:**
While p0144 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Sensor Module.

### p0145[0...n] Activate/de-activate encoder interface / Enc_intf act/deact

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C1(4), U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting to activate/de-activate an encoder interface (Sensor Module).

**Value:**
- 0: De-activate component
- 1: Activate component
- 2: Component, de-activate and not present

**Recommend.:**
After inserting a component, before activating, first wait for Alarm A01317.

**Dependency:**
Refer to: r0146
Refer to: A01314, A01317

**Note:**
The de-activation of an encoder interface corresponds to the "parking encoder" function and has the same effect. The activation of a component can be rejected if the component was inserted for the first time.

In this case, it is only possible to activate the component when the pulses for all of the drive objects are inhibited. With the encoder interface for encoder 1 (motor encoder), the relevant drive object for writing the parameter must be in the "Ready for operation" state.

With the encoder interface for encoders 2 and 3, the parameter can also be written during operation.

Re value = 0, 2:
When a component is deactivated it no longer outputs any errors.
If value = 0:
The component was completely commissioned and is deactivated using this value. It can be removed from the DRIVE-CLiQ without any error.
If value = 1:
The component must be available for error-free operation.
### Parameters

#### List of parameters

If value = 2:

A component in a project generated offline and set to this value must never be inserted in the actual topology from the very start.

For components that comprise several individual components (e.g. Double Motor Modules), it is not permissible to set just one subset to this value.

---

#### r0146[0...n]

**Encoder interface active/inactive / Enc_intf act/inact**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Value:**

- 0: Component inactive
- 1: Component active

**Dependency:**

Refer to: p0105, p0145, p0480, p0897

**Description:**

Displays the "active" or "inactive" state of an encoder interface (Sensor Module).

---

#### r0147[0...n]

**Sensor Module EEPROM data version / SM EEPROM version**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r0127, r0157

**Note:**

Example:

The value 1010100 should be interpreted as V01.01.01.00.

---

#### r0148[0...n]

**Sensor Module firmware version / SM FW version**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r0018, r0128, r0158, r0197, r0198

**Note:**

Example:

The value 1010100 should be interpreted as V01.01.01.00.

---

#### p0150

**Number of VSM data sets / VSM dat_sets qty.**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Value:**

1

**Description:**

Sets the number of VSM data sets.
<table>
<thead>
<tr>
<th>Parameter (p0151[0...1])</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0151</strong></td>
<td>DRIVE-CLiQ Hub Module component number / Hub comp_no</td>
</tr>
<tr>
<td><strong>HUB</strong></td>
<td>Can be changed: C1(4) Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Data sets</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>199 0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>This parameter is used to assign the data set to a DRIVE-CLiQ Hub Module. This unique component number is assigned when parameterizing the topology. Only the numbers of components operated as hubs can be entered in these parameters. [0] = DRIVE-CLiQ node 1 [1] = DRIVE-CLiQ node 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p0151)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Terminal Module component number / TM comp_no</strong></td>
<td></td>
</tr>
<tr>
<td><strong>TM150, TM31, TM54F_MA, TM54F_SL</strong></td>
<td>Can be changed: C1(4) Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Data sets</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>199 0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the component number for the Terminal Module. This unique component number is assigned when parameterizing the topology. Only component numbers can be entered into this parameter that correspond to a Terminal Module.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p0151[0...n])</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Voltage Sensing Module component number / VSM comp_no</strong></td>
<td></td>
</tr>
<tr>
<td><strong>VECTOR_G</strong></td>
<td>Can be changed: C1(4) Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td>Dynamic index: p0150 Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Data sets</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>199 0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The VSM data set is assigned to a VSM evaluation using this parameter. Note: If two VSM are connected at the Motor Module, then the first (p0151[0]) is assigned to the line voltage measurement (see p3801) and the second, to the motor voltage measurement (see p1200).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p0154)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DRIVE-CLiQ Hub Module detection via LED / Hub detection LED</strong></td>
<td></td>
</tr>
<tr>
<td><strong>HUB</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 2</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Encoder</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1 0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Detects any DRIVE-CLiQ Hub Module that has been assigned.</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0154</td>
<td>Terminal Module detection via LED / TM detection LED</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>P-Group: Terminals</td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Min 0</td>
<td>Max 1</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Note:</td>
<td>Detects the Terminal Module assigned to this drive and data set.</td>
<td>While p0154 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Terminal Module.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0155[0...n]</td>
<td>Voltage Sensing Module, activate/de-activate / VSM act/deact</td>
<td>Can be changed: C1(4), T</td>
<td>Calculated: -</td>
<td>P-Group: Data sets</td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: p0150</td>
<td>Units group: -</td>
<td>Scaleing: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Min 0</td>
<td>Max 2</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Value:</td>
<td>Setting to activate/de-activate a Voltage Sensing Module (VSM).</td>
<td>0: De-activate component</td>
<td>1: Activate component</td>
<td>2: Component, de-activate and not present</td>
<td></td>
</tr>
<tr>
<td>Recommend.:</td>
<td>After inserting a component, before activating, first wait for Alarm A01317.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r0156</td>
<td>Refer to: r0156, A01314, A01317</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0156[0...n]</td>
<td>Voltage Sensing Module, active/inactive / VSM act/inact</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>P-Group: Data sets</td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: p0150</td>
<td>Units group: -</td>
<td>Scaleing: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Min 0</td>
<td>Max 1</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Value:</td>
<td>Displays the &quot;active&quot; or &quot;inactive&quot; state of a Voltage Sensing Module (VSM).</td>
<td>0: Component inactive</td>
<td>1: Component active</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p0155</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0157</td>
<td>DRIVE-CLiQ Hub Module EPROM data version / Hub EPROM version</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>P-Group: Terminals</td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td>Scaleing: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Min -</td>
<td>Max -</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the version of the EPROM data for the DRIVE-CLiQ Hub Module.</td>
<td>Note: The value 1010100 should be interpreted as V01.01.01.00.</td>
<td>Example:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### r0157 Terminal Module EPROM data version / TM EPROM version

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM31, TM54F_MA, TM54F_SL</strong></td>
<td>Displays the version of the EPROM data of the Terminal Module.</td>
<td>Refer to: r0127, r0147</td>
<td>The value 1010100 should be interpreted as V01.01.01.00.</td>
</tr>
</tbody>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

### r0157[0...n] Voltage Sensing Module, EPROM data version / VSM EPROM version

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td>Displays the version of the EPROM data of the Voltage Sensing Module (VSM).</td>
<td>Example: The value 1010100 should be interpreted as V01.01.01.00.</td>
<td></td>
</tr>
</tbody>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** p0150
- **Func. diagram:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

### r0158 DRIVE-CLiQ Hub Module firmware version / Hub FW version

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>HUB</strong></td>
<td>Displays the firmware version of the DRIVE-CLiQ Hub Module.</td>
<td>Example: The value 1010100 should be interpreted as V01.01.01.00.</td>
<td></td>
</tr>
</tbody>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

### r0158 Terminal Module firmware version / TM FW version

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM31, TM54F_MA, TM54F_SL</strong></td>
<td>Displays the firmware version of the Terminal Module.</td>
<td>Refer to: r0018, r0128, r0148, r0197, r0198</td>
<td>The value 1010100 should be interpreted as V01.01.01.00.</td>
</tr>
</tbody>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Units group</th>
<th>Scaling</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0158[0...n]</td>
<td>Voltage Sensing Module firmware version / VSM FW version</td>
<td>Unsigned32</td>
<td>Encoder</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p0161</td>
<td>Option board, component number / Opt board comp_no</td>
<td>Unsigned8</td>
<td>Data sets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>199</td>
<td>4</td>
</tr>
<tr>
<td>p0170</td>
<td>Number of Command Data Sets (CDS) / CDS count</td>
<td>Unsigned8</td>
<td>Commands</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>p0180</td>
<td>Number of Drive Data Sets (DDS) / DDS count</td>
<td>Unsigned8</td>
<td>Data sets</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>32</td>
<td>1</td>
</tr>
</tbody>
</table>

Description:
Displays the firmware version of the Voltage Sensing Module (VSM).

Dependency:
Refer to: r0018, r0128, r0197, r0198

Note:
Example:
The value 1010100 should be interpreted as V01.01.01.00.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0186[0...n]</td>
<td>Motor Data Sets (MDS) number / MDS number</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td><strong>Can be changed:</strong> C1(4)</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Data sets</td>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Using the parameter, each Drive Data Set (= index) is assigned the associated Motor Data Set (MDS). The parameter value therefore corresponds to the number of the assigned motor data set.</td>
</tr>
</tbody>
</table>

| p0187[0...n] | Encoder 1 encoder data set number / Enc 1 EDS number |
| VECTOR_G | **Can be changed:** C1(4) | **Calculated:** - | **Access level:** 3 |
| **Data type:** Unsigned8 | **Dynamic index:** DDS, p0180 | **Func. diagram:** 1580, 8570 |
| **P-Group:** Data sets | **Units group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |
| 0 | 99 | 99 |
| **Description:** | Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 1. The value corresponds to the number of the assigned encoder data set. Example: Encoder 1 in drive data set 2 should be assigned to encoder data set 0. --> p0187[2] = 0 |
| **Note:** | A value of 99 means that no encoder has been assigned to this drive data set (not configured). |

| p0188[0...n] | Encoder 2 encoder data set number / Enc 2 EDS number |
| VECTOR_G | **Can be changed:** C1(4) | **Calculated:** - | **Access level:** 3 |
| **Data type:** Unsigned8 | **Dynamic index:** DDS, p0180 | **Func. diagram:** 1580, 8570 |
| **P-Group:** Data sets | **Units group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |
| 0 | 99 | 99 |
| **Description:** | Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 2. The value corresponds to the number of the assigned encoder data set. Example: Encoder 2 in drive data set 2 should be assigned to encoder data set 1. --> p0188[2] = 1 |
| **Note:** | A value of 99 means that no encoder has been assigned to this drive data set (not configured). |

| p0189[0...n] | Encoder 3 encoder data set number / Enc 3 EDS number |
| VECTOR_G | **Can be changed:** C1(4) | **Calculated:** - | **Access level:** 3 |
| **Data type:** Unsigned8 | **Dynamic index:** DDS, p0180 | **Func. diagram:** 1580, 8570 |
| **P-Group:** Data sets | **Units group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |
| 0 | 99 | 99 |
| **Description:** | Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 3. The value corresponds to the number of the assigned encoder data set. |
| **Note:** | A value of 99 means that no encoder has been assigned to this drive data set (not configured). |
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>Edge modulation possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td></td>
<td>Free telegram can be selected</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Smart mode possible for Active Line Module</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Safety Integrated possible for VECTOR</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Liquid cooling</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td></td>
<td>SERVO pulse frequency changeover, DDS-dependent</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td></td>
<td>Simulation mode possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td></td>
<td>Internal armature short-circuit possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Autonomous internal armature short-circuit possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Infeed temperature inputs X21.1/2</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Integral scaled to half the gating unit clock cycle freq.</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Filtering thermal power unit current limit possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>DC link compensation possible in power unit</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>PT100 temperature evaluation possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Gating unit with pulse frequency wobbulation possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>Compound braking possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>Extended voltage range possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td></td>
<td>Gating unit available with current limitation control</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>Component status possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td></td>
<td>Temperature evaluation via Motor Module / CU terminals possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>Reduced device supply voltage possible</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>Current measurement oversampling available</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>Parking keeping the relevant data is available</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td></td>
<td>Internal fan operating hours counter available</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td></td>
<td>Software gating unit in the CU is supported</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>27</td>
<td></td>
<td>Current controller dynamics higher</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

### Notice

This information represents the characteristics/features of the power unit firmware. It does not provide information/data about the characteristics/features of the hardware (e.g. bit 06 = 1 means that although the firmware supports "liquid cooling", a power unit with liquid cooling does not have to be used).

### Note

**Re bit 09:**

The Motor Module supports the internal armature short-circuit. The function is internally required for voltage protection (p1231 = 3).

**Re bit 10:**

The Motor Module supports the autonomous internal voltage protection.

If the "internal voltage protection" function is activated (p1231 = 3) the Motor Module decides autonomously - using the DC link voltage - as to whether the short-circuit is activated.

**Re bit 23:**

The component supports the detection of current actual values (and the detection of valve close durations) with double clocking and phase shift.
**Parameters**

### List of parameters

#### r0194[0...n]  VSM properties / VSM properties

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: p0150</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the properties supported by the Voltage Sensing Module (VSM).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Reserved</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

#### r0196[0...255]  DRIVE-CLiQ component status / DLQ comp status

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the status of DRIVE-CLiQ components.

- **r0196[0...1]:** Not used
- **r0196[2]:** Status of DRIVE-CLiQ component with component number 2
- **r0196[255]:** Status of DRIVE-CLiQ component with component number 255

**Note:**
- Structure of status value: Bits 31 ... 08, 07, 06 ... 04, 03 ... 00
- Re Bit 31 ... 08: Reserved
- Re Bit 07: 1: Part of target topology, 0: Only in actual topology
- Re Bit 06 ... 04: 1: Active, 0: Inactive or parked
- Re Bit 03 ... 00:
  - 0: Component data not available,
  - 1: Power-up, acyclic DRIVE-CLiQ communication (LED = orange),
  - 2: Ready for operation, cyclic DRIVE-CLiQ communication (LED = green),
  - 3: Alarm (LED = green),
  - 4: Fault (LED = red),
  - 5: Detection via LED and ready for operation (LED = green/orange),
  - 6: Detection via LED and alarm (LED = green/orange),
  - 7: Detection via LED and fault (LED = red/orange),
  - 8: Downloading firmware (LED = green/red at 0.5 Hz),
  - 9: Firmware downloading completed, Waiting for POWER ON (LED = green/red at 2.0 Hz).

#### r0197  Bootloader vers / Bootloader vers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the bootloader version.

**Dependency:** Refer to: r0018, r0128, r0148, r0158, r0198

**Note:**
- The value 1010100 should be interpreted as V01.01.01.00.
### r0198[0...1]

**BIOS/EEPROM data version / BIOS/EEPROM vers**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:** Displays the BIOS and EEPROM data version.

- r0198[0]: BIOS version
- r0198[1]: EEPROM data version

**Dependency:** Refer to: r0018, r0128, r0148, r0158, r0197

**Note:** Example: The value 1010100 should be interpreted as V01.01.01.00.

---

### p0199[0...24]

**Drive object name / DO name**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>C1</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Freely assignable name for a drive object.

In the commissioning software, this name cannot be entered using the expert list, but is specified in the configuration assistant. The object name can be subsequently modified in the Project Navigator using standard Windows resources.

**Note:** The parameter is not influenced by setting the factory setting.

---

### r0200[0...n]

**Power unit code number actual / PU code no. act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**Dynamic index:** PDS, p0120

**Unit selection:** -

**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the unique code number of the power unit.

**Note:**
- r0200 = p0201: No power unit found
- For parallel circuit configurations, the parameter index is assigned to a power unit.

---

### p0201[0...n]

**Power unit code number / PU code no**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF</td>
<td>C2(2)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**Dynamic index:** PDS, p0120

**Unit selection:** -

**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

**Dependency:** Refer to: F07815

**Note:**
- The parameter is used to identify when the drive is being commissioned for the first time.
- The power unit commissioning can only be exited (p0201 = r0200), if the actual and acknowledged code numbers are identical (p0010 = 2).
- For parallel circuit configurations, the parameter index is assigned to a power unit.
### List of parameters

#### p0201[0...n]

**Power unit code number / PU code no**

**Description:**
Sets the actual code number from r0200 to acknowledge the power unit being used.

When commissioned for the first time, the code number is automatically transferred from r0200 into p0201.

**Dependency:**
Refer to: F07815

**Value:**
- Can be changed: C2(2)
- Calculated: -
- Access level: 3

**Data type:** Unsigned16

**Dynamic index:** PDS, p0120

**P-Group:** Converter

**Units group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min:** 0

**Max:** 65535

**Factory setting:** 0

**Description:**
Displays the type of power unit found.

#### r0203[0...n]

**Actual power unit type / PU actual type**

**Value:**
- Can be changed: -
- Calculated: -
- Access level: 3

**Data type:** Integer16

**Dynamic index:** PDS, p0120

**P-Group:** Converter

**Units group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min:** 2

**Max:** 400

**Factory setting:** -

**Description:**
Displays the type of power unit found.

**Value:**
- 2: MICROMASTER 440
- 3: MICROMASTER 411
- 4: MICROMASTER 410
- 5: MICROMASTER 436
- 6: MICROMASTER 440PX
- 7: MICROMASTER 430
- 100: SINAMICS S
- 101: SINAMICS S (value)
- 102: SINAMICS S (combi)
- 103: SINAMICS S120M (distributed)
- 112: PM220 (SINAMICS G120)
- 113: PM230 (SINAMICS G120)
- 114: PM240 (SINAMICS G120)
- 115: PM250 (SINAMICS G120 / S120)
- 116: PM260 (SINAMICS G120)
- 118: SINAMICS G120 Px
- 120: PM340 (SINAMICS S120)
- 130: PM250D (SINAMICS G120D)
- 133: SINAMICS G120C
- 150: SINAMICS G
- 151: PM330 (SINAMICS G120)
- 200: SINAMICS GM
- 250: SINAMICS SM
- 260: SINAMICS MC
- 300: SINAMICS GL
- 350: SINAMICS SL
- 400: SINAMICS DCM

**Note:**
For parallel circuit configurations, the parameter index is assigned to a power unit.
### List of parameters

#### r0203[0...15] Firmware package name / FW pkg name

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the name of the firmware package on the memory card/device memory.

r0203[0]: Name character 1

r0203[15]: Name character 16

**Notice:**

An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

#### r0204[0...n] Power unit hardware properties / PU HW property

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Unsigned32</td>
<td>PDS, p0120</td>
<td>Converter</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Displays the properties supported by the power unit hardware.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Device type</td>
<td>DC/AC device</td>
<td>AC/AC device</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>RFI filter available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Active Line Module available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Smart Line Module available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Basic Line Module available with thyristor bridge</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Basic Line Module available with diode bridge</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Liquid cooling with cooling unit (chassis PU)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>F3E regenerative feedback into the line supply</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Internal Braking Module</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Different cooling type supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Safe Brake Control (SBC) supported</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Safety Integrated supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Internal LC output filter</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** For parallel circuit configurations, the parameter index is assigned to a power unit.

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0205</td>
<td>Power unit application / PU application</td>
</tr>
<tr>
<td>R0206[0...4]</td>
<td>Rated power unit power / PU P_rated</td>
</tr>
</tbody>
</table>

### P0205

**Can be changed:** C2(1, 2)  
**Data type:** Integer16  
**P-Group:** Converter  
**Not for motor type:** -  
**Min:** 0  
**Max:** 7  
**Factory setting:** 6

**Description:**  
Overloading the load duty cycles applies under the prerequisite that before and after the overload, the drive converter is operated with its base load current - in this case, a load duty cycle of 300 s is used as basis.  
For booksize drive units, the following applies:  
Only the setting p0205 = 0 can be selected. In this particular case, the base load current has a load duty cycle of 150 % for 60 s and 176 % for 30 s.  
For chassis units, the following applies:  
The base load current for a low overload condition is based on a load duty cycle 110 % for 60 s and 150 % for 10 s.  
The base load current for a high overload condition is based on a load duty cycle 150 % for 60 s and 160 % for 10 s.

**Value:**  
0: Load duty cycle with high overload for vector drives  
1: Load duty cycle with low overload for vector drives  
6: S1 duty cycle for servo drives (feed drive)  
7: S6 duty cycle for servo drives (spindle drive)

**Note:**  
When the parameter is changed, all of the motor parameters and the control mode are pre-assigned according to the selected application.

The parameter has no influence when calculating the thermal overload.  
p0205 can only be changed to the settings that are saved in the power unit EEPROM.  
The parameter value is not reset when the factory setting is restored (see p0010 = 30, p0970).

### R0206[0...4]

**Can be changed:** -  
**Data type:** FloatingPoint32  
**P-Group:** Converter  
**Not for motor type:** -  
**Min:** - [kW]  
**Max:** - [kW]  
**Factory setting:** - [kW]

**Description:**  
Displays the rated power unit power for various load duty cycles.

**Index:**  
[0] = Rated value  
[1] = Load duty cycle with low overload  
[2] = Load duty cycle with high overload  
[3] = S1 cont duty cyc  
[4] = S6 load duty cycle

**Dependency:**  
IEC drives (p0100 = 0): Units kW  
NEMA drives (p0100 = 1): Units hp  
Refer to: p0100, p0205
**List of parameters**

### Parameter: r0207[0...4]
**Rated power unit current / PU PI\_rated**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the rated power unit power for various load duty cycles.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>8014</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Rated value
- [1] = Load duty cycle with low overload
- [2] = Load duty cycle with high overload
- [3] = S1 cont duty cyc
- [4] = S6 load duty cycle

**Dependency:** Refer to: p0205

### Parameter: r0208
**Rated power unit line supply voltage / PU U\_rated**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the rated line supply voltage of the power unit.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = r0208 = 400 : 380 - 480 V +/-10 %
- [1] = r0208 = 500 : 500 - 600 V +/-10 %
- [2] = r0208 = 690 : 660 - 690 V +/-10 %

For the Basic Line Module (BLM) the following applies:
- r0208 = 690 : 500 - 690 V +/-10 %

### Parameter: r0209[0...4]
**Power unit, maximum current / PU I\_max**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the maximum output current of the power unit.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Catalog
- [1] = Load duty cycle with low overload
- [2] = Load duty cycle with high overload
- [3] = S1 load duty cycle
- [4] = S6 load duty cycle

**Dependency:** Refer to: p0205

### Parameter: p0210
**Drive unit line supply voltage / V\_connect**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the drive unit supply voltage (3-ph. AC).</td>
<td>C2(1)</td>
<td>-</td>
<td>1</td>
<td>8760</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = 70 [Vrms]
- [1] = 1000 [Vrms]
### List of parameters

#### p0210 Drive unit line supply voltage / V_connect

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(2), T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Converter</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1 [V]</td>
<td>63000 [V]</td>
<td>600 [V]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the drive unit supply voltage.

**AC/AC unit:** The rms value of the phase-to-phase line supply voltage should be entered.

**DC/AC unit:** The rated DC voltage of the connection busbar should be entered.

**Dependency:**
- Set p1254, p1294 (automatic detection of the Vdc switch-on levels) = 0.
- The switch-in thresholds of the Vdc_max controller are then directly determined using p0210.
- The parameter can be reduced to p0210 = 100 V if p0212.0 = 1 has been set.

Refer to: p0212

**Caution:**
If the line supply voltage is higher than the entered value, the Vdc controller may be automatically de-activated in some cases to prevent the motor from accelerating. In this case, an appropriate alarm is output.

**Note:**
- Setting ranges for p0210 as a function of the rated power unit voltage:
  - U_rated = 400 V:
    - p0210 = 380 ... 480 V (AC/AC), 510 ... 720 V (DC/AC)
    - p0210 = 500 V:
      - p0210 = 500 ... 600 V (AC/AC), 675 ... 900 V (DC/AC)
      - p0210 = 660 ... 690 V:
        - p0210 = 660 ... 690 V (AC/AC), 890 ... 1035 V (DC/AC)
        - p0210 = 500 ... 690 V:
          - p0210 = 500 ... 690 V (AC/AC), 675 ... 1035 V (DC/AC)
  - The pre-charging switch-in threshold for the DC link voltage (Vdc) is calculated from p0210:
    - Vdc_pre = p0210 * 0.82 * 1.35 (AC/AC)
    - Vdc_pre = p0210 * 0.82 (DC/AC)
  - The undervoltage thresholds for the DC link voltage (Vdc) are calculated from p0210 as a function of the rated power unit voltage:
    - U_rated = 400 V:
      - U_min = p0210 * 0.78 (AC/AC) > 330 V, p0210 * 0.60 (DC/AC) > 380 V
### p0212 Power unit configuration / PU config

**B_INF**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Drive unit line supply voltage reduced</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Supply voltage tolerance range extended</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

- Re bit 00: Reduced supply voltages are only possible on booksize power units. Bit 0 = 1 can only be set if r0192.22 = 1.

**Caution:**

- Re bit 00: Working with reduced input voltages de-activates undervoltage detection.
- Re bit 03: If the automatic setting of the Vdc max limit is deactivated, then all of the components connected to the DC link must be suitable for the maximum DC link voltage of the power unit (e.g. 820 V for 400 V units).

**Note:**

- Re bit 00 = 0: It is not possible to reduce the supply voltage in p0210.
- Re bit 00 = 1 (only for B_INF): With this setting the supply voltage in p0210 can be reduced to 70 V. Bit 0 = 1 can only be set for booksize power units with a rated power of up to 40 kW.

### p0212 Power unit configuration / PU config

**VECTOR_G**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Drive unit line supply voltage reduced</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>External pre-charging present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Automatically adapt Vdc_max limit</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

- Re bit 00: Reduced supply voltages are only possible for booksize and chassis power units (DC/AC). Bit 0 = 1 can only be set if r0192.22 = 1.
- Re bit 01 = 1: The external pre-charging setting only affects the DC/AC power units.
- Re bit 03 = 1: The automatic adaptation (reduction) of the Vdc max limit is deactivated (only for chassis power units). Bit 3 only has an effect, if bit 0 is simultaneously set.

**Refer to:** r0192, p0210
### Caution:

- **Re bit 00:**
  Working with reduced input voltages de-activates undervoltage detection.
- **Re bit 03:**
  If the automatic setting of the Vdc max limit is deactivated, then all of the components connected to the DC link must be suitable for the maximum DC link voltage of the power unit (e.g. 820 V for 400 V units).

### Note:

- **Re bit 00 = 0:**
  It is not possible to reduce the supply voltage in p0210.
- **Re bit 00 = 1:**
  With this setting the supply voltage in p0210 can be reduced to 100 V.
  - Booksize PU: only for operating mode p1300 = 19
  - Chassis PU: only for operating mode p1300 > 19 and closed-loop DC voltage control
- **Re bit 01 = 0:**
  There is no external pre-charging of the DC/AC Motor Modules. The pre-charging monitoring is bypassed.
- **Re bit 01 = 1:**
  There is external pre-charging of the DC/AC Motor Modules. The pre-charging monitoring is calculated.
- **Re bit 03 = 0:**
  The DC link voltage limit is calculated from p0210.
- **Re bit 03 = 1:**
  The DC link voltage limit is set to the maximum value of the power unit.

### Description:

Sets the type of the filter at the motor side.

**Value:**

- **0:** No filter
- **1:** Motor reactor
- **2:** dv/dt filter
- **3:** Sine-wave filter, Siemens
- **4:** Sine-wave filter, third-party

### Dependency:

The following parameters are influenced using p0230:

- **p0230 = 1:**
  - --> p0233 (power unit, motor reactor) = filter inductance
  - p0230 = 3:
  - --> p0233 (power unit, motor reactor) = filter inductance
  - --> p0234 (power unit sine-wave filter capacitance) = filter capacitance
  - --> p0290 (power unit overload response) = inhibit pulse frequency reduction
  - --> p1082 (maximum speed) = Fmax filter / pole pair number
  - --> p1800 (pulse frequency) >= nominal pulse frequency of the filter
  - --> p1802 (modulator modes) = space vector modulation without overcontrol
  - --> p1811 (modulator configuration) = wobbulation amplitude
  - --> p1909 (motor data identification, control word) = only Rs measurement

- **p0230 = 4:**
  - --> p0290 (power unit overload response) = inhibit pulse frequency reduction
  - --> p1802 (modulator modes) = space vector modulation without overcontrol
  - --> p1811 (modulator configuration) = wobbulation amplitude
  - --> p1909 (motor data identification, control word) = only Rs measurement

---

**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0230</td>
<td>VECTOR_G</td>
<td>Can be changed: C2(1, 2)</td>
<td>The following parameters are influenced using p0230:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculated: -</td>
<td>p0230 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dynamic index: -</td>
<td>--&gt; p0233 (power unit, motor reactor) = filter inductance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Converter</td>
<td>p0230 = 3:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Units group: -</td>
<td>--&gt; p0233 (power unit, motor reactor) = filter inductance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>--&gt; p0234 (power unit sine-wave filter capacitance) = filter capacitance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scaling: -</td>
<td>--&gt; p0290 (power unit overload response) = inhibit pulse frequency reduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>--&gt; p1082 (maximum speed) = Fmax filter / pole pair number</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>--&gt; p1800 (pulse frequency) &gt;= nominal pulse frequency of the filter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>--&gt; p1802 (modulator modes) = space vector modulation without overcontrol</td>
</tr>
</tbody>
</table>

| Description | Sets the type of the filter at the motor side. |
| Value | |
| 0 | No filter |
| 1 | Motor reactor |
| 2 | dv/dt filter |
| 3 | Sine-wave filter, Siemens |
| 4 | Sine-wave filter, third-party |

**Access level:** 1
**Func. diagram:** -
**Unit selection:** -
**Expert list:** 1

**Data type:** Integer16
**Dynamic index:** -
**Units group:** -
**Unit selection:** -
**Expert list:** 1

**Min:** 0
**Max:** 4
**Factory setting:** 0
The user must set the following parameters according to the data sheet of the sine-wave filter and also the user must check whether they are permitted.

--> p0233 (power unit, motor reactor) = filter inductance
--> p0234 (power unit sine-wave filter capacitance) = filter capacitance
--> p1082 (maximum speed) = Fmax filter / pole pair number
--> p1800 (pulse frequency) >= nominal pulse frequency of the filter

Refer to: p0233, p0234, p0290, p1082, p1800, p1802

**Note:**

if a filter type cannot be selected, then this filter type is not permitted for the Motor Module.

\[ p0230 = 1: \]

The output frequency of booksize power units with output reactors is restricted to 120 Hz, for blocksize and chassis power units, to 150Hz. The maximum pulse frequency for booksize and blocksize power units is 4 kHz, for chassis power units, twice the rated pulse frequency (2.5 kHz or 4 kHz).

\[ p0230 = 2: \]

Chassis power units with dv/dt filter, depending on the rated pulse frequency, may be operated with a maximum pulse frequency of \( p1800 = 2.5 \text{ kHz or } 4 \text{ kHz} \). The output frequency is limited to 150 Hz.

\[ p0230 = 3: \]

Sine-wave filters with a rated pulse frequency of 1.25 or 2.5 kHz should only be operated with a current controller sampling rate \( p0115[0] = 400 \mu s \), sine-wave filters with a rated pulse frequency of 2 or 4 kHz with \( p0115[0] = 250 \mu s \).

The sine-wave filter cannot be selected if the current controller sampling rate has not been appropriately set.

Chassis power units with sine-wave filter are limited to output frequencies of 115 Hz or 150 Hz.

### p0233 Power unit motor reactor / PU mot reactor

**VECTOR_G**

*Can be changed: C2(2), U, T*

*Data type: FloatingPoint32*

*P-Group: Converter*

*Not for motor type: -*

*Min: 0.000 [mH] Max: 1000.000 [mH] Factory setting: 0.000 [mH]*

**Description:**
Enter the inductance of a filter connected at the power unit output.

**Dependency:**
This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.

Refer to: p0230

**Note:**

When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0) and then the controller calculation (p0340 = 3) is carried out.

### p0234 Power unit sine-wave filter capacitance / PU sine filter C

**VECTOR_G**

*Can be changed: C2(2), U, T*

*Data type: FloatingPoint32*

*P-Group: Converter*

*Not for motor type: -*

*Min: 0.000 [µF] Max: 1000.000 [µF] Factory setting: 0.000 [µF]*

**Description:**
Enters the capacitance of a sine-wave filter connected at the power unit output.

**Dependency:**
This parameter is automatically pre-set when you select a filter via p0230 if a SIEMENS filter is defined for the power unit.

Refer to: p0230

**Note:**

The parameter value includes the sum of all of the capacitances of a phase connected in series (phase - ground). When exiting the quick commissioning using p3900 = 1, the parameter value is set to the value of the defined SIEMENS filter or to zero. For this reason, the parameter value of a third-party filter only has to be entered outside the commissioning phase (p0010 = 0).
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0235</strong></td>
<td><strong>Motor reactor in series number / L_mot in SeriesQty</strong></td>
<td><strong>VECTOR_G</strong></td>
<td>Can be changed: C2(1, 2)</td>
<td>Calculated:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned8</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Converter</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>r0238</strong></td>
<td><strong>Internal power unit resistance / PU R internal</strong></td>
<td><strong>VECTOR_G</strong></td>
<td>Can be changed: -</td>
<td>Calculated:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Converter</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td></td>
</tr>
<tr>
<td><strong>p0249</strong></td>
<td><strong>Power unit cooling type / PU cool type</strong></td>
<td><strong>VECTOR_G</strong></td>
<td>Can be changed: C2(1, 2)</td>
<td>Calculated:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Converter</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>p0251[0...n]</strong></td>
<td><strong>Operating hours counter power unit fan / PU fan t_oper</strong></td>
<td><strong>B_INF, VECTOR_G</strong></td>
<td>Can be changed: T</td>
<td>Calculated:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: PDS, p0120</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Modulation</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 [h]</td>
<td>4294967295 [h]</td>
<td>0 [h]</td>
<td></td>
</tr>
</tbody>
</table>

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### p0252 Maximum operating time power unit fan / PU fan t_oper max

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Type</th>
<th>Units</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
<td>Sets the maximum operating time of the power unit fan. The pre-alarm (warning) is output 500 hours before this set value. The monitoring is de-activated with p0252 = 0.</td>
<td></td>
</tr>
</tbody>
</table>

#### Dependency:
Refer to: p0251

#### Note:
For chassis units, the maximum operating time in the power unit parameter is set to 50000 via the factory setting.

### p0255[0...1] Power unit contactor monitoring time / PU cont t_monit

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Type</th>
<th>Units</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Sets the monitoring time for internal monitoring of the contactor feedback contacts.</td>
<td></td>
</tr>
</tbody>
</table>

#### Index:
- [0] = Pre-charge contactor
- [1] = Bypass contactor

#### Dependency:
Refer to: F30060, F30061

#### Note:
This parameter is only effective for chassis power units with 3 AC line connection and line contactors. A value of 0 de-activates the associated line contactor monitoring.

### p0260 Cooling unit, starting time 1 / RKA start time 1

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Type</th>
<th>Units</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF (Cool_unit), VECTOR_G (Cool_unit)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Sets starting time 1 to monitor the cooling unit after power-on command. After powering up, the following signals must be present within starting time 1:</td>
<td></td>
</tr>
</tbody>
</table>

#### Dependency:
Refer to: F49152, F49153

#### Note:
RKA: Cooling unit

### p0261 Cooling unit, starting time 2 / RKA start time 2

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Type</th>
<th>Units</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF (Cool_unit), VECTOR_G (Cool_unit)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Sets starting time 2 to monitor the cooling unit after power-on command.</td>
<td></td>
</tr>
</tbody>
</table>

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After powering up, the following signals must be present within starting time 2:
- "RKA conductivity, no fault"
- "RKA conductivity, no alarm"
When a fault occurs, an appropriate message is output.

### Dependency:
Refer to: p0266
Refer to: F49151, A49171

---

**p0262 Cooling unit, fault conductivity delay time / RKA cond t_del**

<table>
<thead>
<tr>
<th>B_INF (Cool_unit), VECTOR_G (Cool_unit)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 9795  
**P-Group:** Converter  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** 0.0 [s]  
**Max:** 30.0 [s]  
**Factory setting:** 0.0 [s]

**Description:**  
Sets the delay time for the fault "RKA: Conductive limit value exceeded" during operation.  
The fault is only output if, during operation, the conductivity exceeds the permissible fault value and the value remains for a longer time than is set in this parameter.

**Dependency:**  
Refer to: F49151

---

**p0263 Cooling unit fault liquid flow, delay time / RKA flow t_del**

<table>
<thead>
<tr>
<th>B_INF (Cool_unit), VECTOR_G (Cool_unit)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 9795  
**P-Group:** Converter  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** 0.0 [s]  
**Max:** 20.0 [s]  
**Factory setting:** 3.0 [s]

**Description:**  
Sets the delay time for the fault "RKA: Liquid flow too low".  
The fault is only output if the cause is present for a time longer than is set in this parameter.

**Dependency:**  
Refer to: F49153

---

**p0264 Cooling unit, run-on time / RKA run-on time**

<table>
<thead>
<tr>
<th>B_INF (Cool_unit), VECTOR_G (Cool_unit)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 9795  
**P-Group:** Converter  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** 0.0 [s]  
**Max:** 180.0 [s]  
**Factory setting:** 30.0 [s]

**Description:**  
Sets the run-up time of the cooling unit after a power-off command.

---

**r0265.0...3 BO: Cooling unit, control word / RKA CTW**

<table>
<thead>
<tr>
<th>B_INF (Cool_unit), VECTOR_G (Cool_unit)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned8  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Commands  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:**  
Displays the control word for the cooling unit.

**Bit field:**  
**Bit** | **Signal name** | **1 signal** | **0 signal** | **FP**
---|-----------------|--------------|--------------|
00 | Power up cooling unit | Activating | De-activating |
01 | Message converter off | OFF | ON |
02 | Acknowledge faults | Acknowledgement | No acknowledgement |
03 | Leakage sensing OK | No leaked liquid | Leaked liquid |
**Parameters**

**List of parameters**

**p0266[0...7]**

**BI: Cooling unit, feedback signals, signal source / RKA fdbk S_src**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned32 / Binary

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**P-Group:** Communications

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

- **Max**

**Factory setting**

**Description:**
Sets the signal sources for the feedback signals from the cooling unit.

**Index:**

- [0] = Cooling unit powered up
- [1] = Cooling unit ready to be powered up
- [2] = Cooling unit, no alarm present
- [3] = Cooling unit, no fault present
- [4] = Cooling unit, no leaked liquid
- [5] = Cooling unit, liquid flow OK
- [6] = Cooling unit, conductivity < fault threshold
- [7] = Cooling unit, conductivity < alarm threshold

**Dependency:**
Refer to: p0266

**r0267.0...7**

**BO: Cooling unit status word / RKA ZSW**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned16

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**P-Group:** Commands

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

- **Max**

**Factory setting**

**Description:**
Displays the status word of the cooling unit.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>RKA powered up</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>RKA ready to be powered up</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>RKA no alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>RKA no fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>RKA no leaked fluid</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>RKA liquid flow OK</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>RKA conductivity, no fault</td>
<td>Yes</td>
<td>No</td>
<td>9974</td>
</tr>
<tr>
<td>07</td>
<td>RKA conductivity, no alarm</td>
<td>Yes</td>
<td>No</td>
<td>9974</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0266

**p0278**

**DC link voltage undervoltage threshold reduction / Vdc U_under red**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**P-Group:** Converter

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

- **Max**

**Factory setting**

-80 [V]  0 [V]

**Description:**
Sets the absolute value by which the threshold to initiate the undervoltage fault (F30003) is reduced.

**Dependency:**
Refer to: p0210, r0296

Refer to: F30003

**Notice:**
When using a Control Supply Module (CSM) for 24 V supply from the DC link, the minimum continuous DC link voltage may not lie below 430 V. DC link voltages in the range 300 ... 430 V are permissible up to a duration of 1 min. For chassis power units, this parameter has no significance.

**Note:**
The resulting shutdown threshold can be read in r0296 and is dependent on the selected rated voltage (p0210) and the power unit being used.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0279</td>
<td>Sets the voltage threshold to initiate alarm A06810.</td>
<td>Refer to: p0210, r0296, A06810</td>
<td>The absolute value of the undervoltage threshold r0296 depends on the selected unit supply voltage (p0210).</td>
</tr>
<tr>
<td>p0287[0...1]</td>
<td>Sets the shutdown thresholds for the ground fault monitoring.</td>
<td>Refer to: F30021</td>
<td>De-activating the ground fault monitoring:</td>
</tr>
<tr>
<td>r0289</td>
<td>Sets the response to a thermal overload condition of the power unit.</td>
<td></td>
<td>- the prerequisite is at least firmware version 2.2 of the power unit.</td>
</tr>
<tr>
<td>p0290</td>
<td>Sets the response to a thermal overload condition of the power unit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

The following quantities can result in a response to thermal overload:
- heat sink temperature (r0037 index 0)
- chip temperature (r0037 index 1)
- power unit overload I2T (r0036)

Possible measures to avoid thermal overload:
- reduce the output current limit r0289 and r0067 (for closed-loop speed/velocity or torque/force control) or the output frequency (for U/f control) indirectly via the output current limit and the intervention of the current limiting controller.
- reduce the pulse frequency (only for vector control).

A reduction, if parameterized, is always realized after an appropriate alarm is output.

**Value:**
- 0: Reduce output current or output frequency
- 1: No reduction, shutdown when overload threshold is reached
- 2: Reduce i_output or f_output and f_pulse (not using I2t)
- 3: Reduce the pulse frequency (not using I2t)

**Dependency:**
If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), then only responses can be selected without pulse frequency reduction (p0290 = 0, 1).
If a fault or alarm is present, then r2135.13 or r2135.15 is set.
Refer to: r0036, r0037, p0108, r0108, p0230, r2135
Refer to: A05000, A05001, A07805

**Caution:**
If the thermal overload of the power unit is not sufficiently reduced by the actions taken, the drive is always shut down. This means that the power unit is always protected irrespective of the setting of this parameter.

**Note:**
The setting p0290 = 0, 2 is only practical if the load decreases with decreasing speed (e.g., applications with variable torque such as for pumps and fans).
Under overload conditions, the current and torque limit are reduced, and therefore the motor is braked and forbidden speed ranges (e.g., minimum speed p1090 and suppression [skip] speeds p1091 ... p1094) can be passed through.
For p0290 = 2, 3, the I2t overload detection of the power unit does not influence the responses.
When the motor data identification routine is selected, p0290 cannot be changed.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Unit selection</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0293 CO</td>
<td>Power unit alarm threshold model temperature / PU A_thr mod_temp</td>
<td>FloatingPoint32</td>
<td>Converter</td>
<td>-</td>
<td>p0505</td>
<td>3</td>
<td>8014</td>
<td>-</td>
<td>-</td>
<td>21_1</td>
<td>p2006</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>p0294</td>
<td>Power unit alarm with I2t overload / PU I2t alrm thresh</td>
<td>FloatingPoint32</td>
<td>Converter</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>8014</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
The parameter is only relevant for chassis power units.

**Note:**
The parameter is only relevant for booksize units!
### p0294: Power unit alarm with I2t overload / PU I2t alrm thresh

**Description:**
Sets the alarm threshold for the I2t power unit overload.

**Drive:**
If this threshold is exceeded, an overload alarm is generated and the system responds as parameterized in p0290.

**Infeed:**
When the threshold value is exceeded, only an overload alarm is output.

**Dependency:**
Refer to: r0036, p0290
Refer to: A07805

**Note:**
The I2t fault threshold is 100 %. If this value is exceeded, fault F30005 is output.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN</td>
<td>FloatingPoint32</td>
<td>3</td>
</tr>
<tr>
<td>MAX</td>
<td>FloatingPoint32</td>
<td>3</td>
</tr>
</tbody>
</table>

### p0295: Fan run-on time / Fan run-on time

**Description:**
Sets the fan run-on time after the pulses for the power unit have been canceled.

**Note:**
- Under certain circumstances, the fan can continue to run for longer than was set (e.g., as a result of the excessively high heat sink temperature).
- For values less than 1 s, a 1 s run on time for the fan is active.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN</td>
<td>FloatingPoint32</td>
<td>1</td>
</tr>
<tr>
<td>MAX</td>
<td>FloatingPoint32</td>
<td>1</td>
</tr>
</tbody>
</table>

### r0296: DC link voltage undervoltage threshold / Vdc U_lower_thresh

**Description:**
If the DC link voltage falls below the threshold specified here, the infeed is tripped due to a DC link undervoltage condition.

**Dependency:**
Refer to: F30003

**Note:**
The value depends on the device type and the selected rated voltage p0210.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIN</td>
<td>Unsigned16</td>
<td>2</td>
</tr>
<tr>
<td>MAX</td>
<td>Unsigned16</td>
<td>2</td>
</tr>
</tbody>
</table>

### r0296: DC link voltage undervoltage threshold / Vdc U_lower_thresh

**Description:**
Sets the threshold for detecting a DC link undervoltage.

If the DC link voltage falls below this threshold, the Motor Module is shut down due to a DC link undervoltage condition (F30003).
Parameters
List of parameters

Dependency: Refer to: p0278
Refer to: F30003

Note: The value depends on the device type and the selected rated voltage p0210.
For booksize drive units, the following applies:
The undervoltage threshold can be reduced with p0278.

r0297 DC link voltage overvoltage threshold / Vdc U_upper_thresh
B_INF, VECTOR_G
Can be changed: - Calculated: - Access level: 2
Data type: Unsigned16 Dynamic index: - Func. diagram: 8750, 8760, 8850, 8864, 8950, 8964
P-Group: Converter Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - [V] Max - [V] Factory setting

Description: If the DC link voltage exceeds the threshold specified here, the drive unit is tripped due to DC link overvoltage.

Dependency: Refer to: F30002

p0300[0...n] Motor type selection / Mot type sel
VECTOR_G
Can be changed: C2(1, 3) Calculated: - Access level: 1
Data type: Integer16 Dynamic index: MDS, p0130 Func. diagram: 6310
P-Group: Motor Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min 0 Max 10001 Factory setting 0

Description: Selects the motor type or starts to read in the motor parameters for a motor with DRIVE-CLiQ (p0300 = 10000 or 10001, if there is a second data set).
For p0300 < 10000 the following applies:
The first digit of the parameter value always defines the general motor type and corresponds to the third-party motor belonging to a motor list:
1 = Rotating induction motor
2 = Rotating synchronous motor
3 = Linear induction motor (reserved)
4 = Linear synchronous motor
5 = Synchronous motor separately-excited
7 = SIEMOSYN motor
8 = Reluctance motor
The type information must be entered to filter motor-specific parameters and to optimize the operating characteristics and behavior. For example, for synchronous motors, power factor (p0308) is neither used nor displayed (in the BOP/AOP).

Value:
0: No motor
1: Induction motor (rotating)
2: Synchronous motor (rotating, permanent-magnet)
7: SIEMOSYN motor
8: Reluctance motor
10: 1LE1 standard induction motor
11: 1LA1 standard induction motor
12: 1LE2 standard induction motor (NEMA)
13: 1LG6 standard induction motor
15: 1LA5 standard induction motor
16: 1LA6 standard induction motor
17: 1LA7 standard induction motor
18: 1LA8 / 1PQ8 standard induction motor
19: 1LA9 standard induction motor
102: 1PH2 induction motor
104: 1PH4 induction motor
107: 1PH7 induction motor
108: 1PH8 induction motor
111: Induction motor (rotary) for OEMs
134: 1PM4 induction motor
136: 1PM6 induction motor
166: 1PL6 induction motor
222: Synchronous motor (rotary) for OEMs
264: 1FW4 synchronous motor
283: 1FW3 synchronous motor
10000: Motor with DRIVE-CLiQ
10001: Motor with DRIVE-CLiQ 2nd data set

Dependency:
Motors, selection 206, 236, 237 cannot be operated (also not as motor with DRIVE-CLiQ).
p0300 = 5 cannot be selected with SINAMICS G.
When the motor type is changed, the code number in p0301 may be reset to 0.
p0300 = 12 can only be selected for p0100 = 1 (NEMA).
When selecting a motor type from the 1LA5 and 1LA7 series, parameters p0335, p0626, p0627 and p0628 of the
thermal motor model are pre-assigned as a function of p0307 and p0311.
When selecting a 1FW4 motor, if the motor database permits this, when exiting commissioning then p1750 bit 5 is
automatically set. This is the reason that after exiting commissioning, all parameters must be saved and a warm
restart must be initiated (e.g. p0009=30, p0976=3).
Refer to: p0301

Caution:
A permanent-magnet synchronous motor cannot be operated with an SSI encoder without HTL/TTL track.
A separately-excited synchronous motor can only be operated with an SSI encoder if this is used as the second
encoder and an HTL/TTL encoder is used as the first encoder.

Caution:
If a catalog motor is selected (p0300 >= 100) and an associated motor code number (p0301), then the parameters
that are associated with this list cannot be changed (write protection). The write protection is canceled if the motor
type p0300 is set to a non-Siemens motor that matches p0301 (e.g. p0300 = 2 for p0301 = 2xxxx). Write protection
is automatically canceled when the results of motor data identification are copied to the motor parameters.
The motor type of a catalog motor corresponds to the upper three digits of the code number or the following assign-
ment (if the particular motor type is listed):
Type/code number ranges
102 / 102xx, 112xx, 122xx
104 / 104xx, 114xx, 124xx
107 / 107xx, 117xx, 127xx
108 / 108xx, 118xx, 128xx, 138xx, 148xx, 158xx
134 / 134xx, 144xx, 154xx
136 / 136xx, 146xx, 156xx
166 / 166xx, 176xx, 186xx
264 / 264xx, 274xx, 284xx, 294xx
283 / 283xx, 293xx

Notice:
For 1PQ8 motors (p0300 = 18) the fan type p0335 should be set to 5.

Note:
With p0300 = 10000, for a motor with DRIVE-CLiQ, the motor parameters are automatically downloaded, with
p0300 = 10001, the motor parameters of a second data set (if available).
If a motor type has not been selected (p0300 = 0), then the drive commissioning routine cannot be exited.
A motor type with a value above p0300 >= 100 describes motors for which a motor parameter list exists.
Motor types with a value below p0300 < 100 correspond to the selection of a third-party motor. When appropriately
selected, this means that the motor parameters are pre-assigned the settings for a third-party motor.
This also applies for parameters for a motor with DRIVE-CLiQ. In this case p0300 can only be set to p0300 = 10000
or 10001 (read motor parameters) or to the corresponding non-Siemens motor (first digit of the motor code number)
in order to be able to cancel the write protection.
### p0301[0...n] Motor code number selection / Mot code No. sel

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td><strong>Can be changed:</strong> C2(1, 3) <strong>Calculated:</strong> - <strong>Access level:</strong> 1</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td><strong>Unsigned16</strong></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td><strong>Motor</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td><strong>FEM</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td><strong>65535</strong></td>
</tr>
</tbody>
</table>

**Description:**
The parameter is used to select a motor from a motor parameter list. When changing the code number (with the exception to the value 0), all of the motor parameters are pre-assigned from the internally available parameter lists.

**Dependency:**
Code numbers can only be selected for motor types that correspond to the motor type selected in p0300. For 1PH2, 1PH4, 1PH7, 1PM4, 1PM6, 1FT6 motors, code numbers are also possible, whose fourth decimal position is greater by a value of 1 or 2 than the matching motor type in p0300. For 1FE1 motors, the third decimal position can be higher by a value of 1.

**Note:**
The motor code number can only be changed if the matching catalog motor was first selected in p0300. For a motor with DRIVE-CLiQ, p0301 cannot be changed. In this case, p0301 is automatically written to the code number of the motor parameter read in (r0302) if p0300 is set to 10000.

When selecting a catalog motor (p0300 >= 100), drive commissioning can only be exited if a code number is selected.

### r0302[0...n] Motor code number of motor with DRIVE-CLiQ / Motor code Mot DLQ

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td><strong>Can be changed:</strong> - <strong>Calculated:</strong> - <strong>Access level:</strong> 2</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td><strong>Unsigned16</strong></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td><strong>Motor</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the motor code number from the saved motor data from a motor with DRIVE-CLiQ.

**Note:**
Drive commissioning can only be exited if the code number that was downloaded (r0302) matches the stored code number (p0301). If the numbers differ, then the motor data set should be re-loaded using p0300 = 10000.

The motor data are always expected from the first encoder that is assigned to the drive data sets (refer to p0187 = encoder 1) data set number.

The value is not updated cyclically but only on specific events (e.g. update DRIVE-CLiQ device).

r0302 > 0: No motor with DRIVE-CLiQ found

### r0303[0...n] Motor with DRIVE-CLiQ status word / Motor w DLQ ZSW

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td><strong>Can be changed:</strong> - <strong>Calculated:</strong> - <strong>Access level:</strong> 2</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td><strong>Unsigned16</strong></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td><strong>Motor</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status word of the automatic motor parameter sensing of a motor with DRIVE-CLiQ.

Motor parameter sensing takes place in the following events if the SMI is connected to the Motor Module and the encoder is activated (p0145):
- Warm restart
- downloading projects.
- POWER ON (off/on).
- where p0300 = 10000, 10001.
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Motor data set selected</td>
<td>MDS1</td>
<td>MDS0</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Motor connection type</td>
<td>Delta</td>
<td>Star</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Windings can be changed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Windings can be changed number</td>
<td>2</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0145, p0300

**Note:**
SMI: SINAMICS Sensor Module Integrated

---

#### p0304[0...n] Rated motor voltage / Mot U_rated

**VECTOR_G**

- Can be changed: C2(1, 3)
- Calculated: -
- Access level: 1
- Data type: FloatingPoint32
- Dynamic index: MDS, p0130
- Unit selection: -
- P-Group: Motor
- Units group: -
- Unit selection: -
- Not for motor type: -
- Expert list: 1
- Min: 0 [Vrms]
- Max: 20000 [Vrms]
- Factory setting: 0 [Vrms]

**Description:**
Sets the rated motor voltage (rating plate).

**Dependency:**
Refer to: p0349

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

---

#### p0305[0...n] Rated motor current / Mot I_rated

**VECTOR_G**

- Can be changed: C2(1, 3)
- Calculated: -
- Access level: 1
- Data type: FloatingPoint32
- Dynamic index: MDS, p0130
- Unit selection: -
- P-Group: Motor
- Units group: -
- Unit selection: -
- Not for motor type: -
- Expert list: 1
- Min: 0.00 [Arms]
- Max: 10000.00 [Arms]
- Factory setting: 0.00 [Arms]

**Description:**
Sets the rated motor current (rating plate).

**Dependency:**
Refer to: p0349

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Notice:**
If p0305 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

If the rated motor current exceeds twice the maximum drive converter current (r0209), then the maximum current is reduced due to the current harmonics that increase overproportionally (r0067).

**Note:**
When the parameter value is entered the connection type of the motor (star-delta) must be taken into account.

---

#### p0306[0...n] Number of motors connected in parallel / Motor qty

**VECTOR_G**

- Can be changed: C2(1, 3)
- Calculated: -
- Access level: 1
- Data type: Unsigned8
- Dynamic index: MDS, p0130
- Unit selection: -
- P-Group: Motor
- Units group: -
- Unit selection: -
- Not for motor type: FEM
- Expert list: 1
- Min: 1
- Max: 50
- Factory setting: 1

**Description:**
Number of motors that can be operated in parallel using one motor data set.

Depending on the motor number entered, internally an equivalent motor is calculated. The following should be carefully observed for motors connected in series:

The following rating plate data should only be entered for one motor:
- resistances and inductances: p0350 ... p0361
- currents: p0305, p0320, p0323, p0325, p0329, p0389, p0390, p0391, p0392
- power ratings: p0307
- masses/moments of inertia: p0341, p0344

All other parameters take into account the replacement/equivalent motor (e.g. r0331, r0333).
**Parameters**

*List of parameters*

---

**Recommend:**
For motors connected in parallel, external thermal protection should be provided for each individual motor.

**Dependency:**
Refer to: r0331

**Caution:**
The motors to be connected in parallel must be of the same type and size (same order no. (MLFB)).

The mounting regulations when connecting motors in parallel must be carefully maintained! Especially for synchronous motors, the pole position of motors that are rigidly coupled with one another (mechanically) must be identical.

The number of motors set must correspond to the number of motors that are actually connected in parallel.

After changing p0306, it is imperative that the control parameters are adapted (e.g. using automatic calculation with p0340 = 1).

For synchronous motors connected in parallel with p1300 >= 20, the following applies:
- the individual motors must be mechanically coupled with one another and the EMF must be aligned to one another.

For induction motors that are connected in parallel, but which are not mechanically coupled with one another, then the following applies:
- an individual motor must not be loaded beyond its stall point.

**Notice:**
If p0306 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is appropriately pre-assigned. This is not the case when commissioning the motor (p0010 = 3).

**Note:**
Only operation with U/f characteristic makes sense if more than 10 identical motors are connected in parallel.

Separately-excited synchronous motors must not be connected in parallel.

Synchronous and reluctance motors that are not coupled with one another align themselves when the pulses are switched in. If the motors have different load levels, then equalization currents flow between the motors.

---

### p0307[0...n] Rated motor power / Mot P_rated

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(1, 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-100000.00 [kW]</td>
</tr>
<tr>
<td>Max</td>
<td>100000.00 [kW]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rated motor power (rating plate).

**Dependency:**
IEC drives (p0100 = 0): Units kW
NEMA drives (p0100 = 1): Units hp

Refer to: p0100

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
For generators, a negative rated power should be entered.

---

### p0308[0...n] Rated motor power factor / Mot cos_phi_rated

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(1, 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL</td>
</tr>
<tr>
<td>Min</td>
<td>0.000</td>
</tr>
<tr>
<td>Max</td>
<td>1.000</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rated motor power factor (cos phi, rating plate).

For a parameter value of 0.000, the power factor is internally calculated and displayed in r0332.

**Dependency:**
This parameter is only available for IEC motors (p0100 = 0).

Refer to: p0100, p0309, r0332

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
The parameter is not used for synchronous motors (p0300 = 2xx).
**p0309[0...n]**  
**Rated motor efficiency / Mot eta_{rated}**  
**VECTOR_G**  
**Can be changed:** C2(1, 3)  
**Calculated:** -  
**Access level:** 1  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** PEM, REL  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.0 [%]  
**Max**  
99.9 [%]  
**Factory setting**  
0.0 [%]  

**Description:**  
Sets the rated motor efficiency (rating plate).  
For a parameter value of 0.0, the power factor is internally calculated and displayed in r0332.  

**Dependency:**  
This parameter is only available for NEMA motors (p0100 = 1).  
Refer to: p0100, p0308, r0332  

**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.  

**Note:**  
The parameter is not used for synchronous motors (p0300 = 2xx).  

---  

**p0310[0...n]**  
**Rated motor frequency / Mot f_{rated}**  
**VECTOR_G**  
**Can be changed:** C2(1, 3)  
**Calculated:** -  
**Access level:** 1  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** 6300  
**P-Group:** Motor  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.00 [Hz]  
**Max**  
3000.00 [Hz]  
**Factory setting**  
0.00 [Hz]  

**Description:**  
Sets the rated motor frequency (rating plate).  
The number of pole pairs (r0313) is automatically re-calculated when the parameter is changed (together with p0311), if p0314 = 0.  
The rated frequency is restricted to values between 1.00 Hz and 650.00 Hz.  
Refer to: p0311, r0313, p0314  

**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.  

**Notice:**  
If p0310 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).  

---  

**p0311[0...n]**  
**Rated motor speed / Mot n_{rated}**  
**VECTOR_G**  
**Can be changed:** C2(1, 3)  
**Calculated:** -  
**Access level:** 1  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.0 [rpm]  
**Max**  
210000.0 [rpm]  
**Factory setting**  
0.0 [rpm]  

**Description:**  
Sets the rated motor speed (rating plate).  
For VECTOR the following applies (p0107):  
For p0311 = 0, the rated motor slip of induction motors is internally calculated and displayed in r0330.  
It is especially important to correctly enter the rated motor speed for vector control and slip compensation for U/f control.  

**Dependency:**  
If p0311 is changed and for p0314 = 0, the pole pair (r0313) is re-calculated automatically.  
Refer to: p0310, r0313, p0314  

**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.  

**Notice:**  
If p0311 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).
### r0313[0...n] Motor pole pair number, actual (or calculated) / Mot PolePairNo act

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Motor  
**Not for motor type:** -  
**Min** | **Max**  
| - | - |

**Description:** Displays the number of motor pole pairs. The value is used for internal calculations.

- r0313 = 1: 2-pole motor
- r0313 = 2: 4-pole motor, etc.

**Dependency:**

- For p0314 > 0, the entered value is displayed in r0313.
- For p0314 = 0, the pole pair number (r0313) is automatically calculated from the rated power (p0307), rated frequency (p0310) and rated speed (p0311).  
  Refer to: p0307, p0310, p0311, p0314

**Note:**

- For the automatic calculation, the pole pair number is set to the value of 2 if the rated speed or the rated frequency is zero.

### p0314[0...n] Motor pole pair number / Mot pole pair No.

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(1, 3)</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Motor  
**Not for motor type:** -  
**Min** | **Max**  
| 0 | 255 |

**Description:** Sets the motor pole pair number.

- p0314 = 1: 2-pole motor
- r0314 = 2: 4-pole motor, etc.

**Dependency:**

- For p0314 = 0, the pole pair number is automatically calculated from the rated frequency (p0310) and the rated speed (p0311) and displayed in r0313.

**Notice:**

- If p0314 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).

  For induction motors, the value need only be input if the rated data of a generator is entered therefore resulting in a negative rated slip. In this case, the number of pole pairs in r0313 is too low by 1 and must be manually corrected.

### p0316[0...n] Motor torque constant / Mot kT

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(1, 3), U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Motor  
**Not for motor type:** ASM, REL, FEM  
**Min** | **Max**  
| 0.00 [Nm/A] | 400.00 [Nm/A] | 0.00 [Nm/A] |

**Description:** Sets the torque constant of the synchronous motor.

- p0316 = 0: The torque constant is calculated from the motor data.
- p0316 > 0: The selected value is used as torque constant.

**Dependency:**

- Refer to: r0334

**Caution:**

- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**

- This parameter is not used for induction motors (p0300 = 1xx).
### List of parameters

**p0318[0...n]**  
**Motor stall current / Mot I_standstill**  
**VECTOR_G**  
Can be changed: C2(3)  
Data type: FloatingPoint32  
P-Group: Motor  
Not for motor type: ASM, REL, FEM  
Min: 0.00 [Arms]  
Max: 1000.00 [Arms]  
Factory setting: 0.00 [Arms]

**Description:**  
Sets the stall current for synchronous motors (p0300 = 2xx).

**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**  
The parameter is used for the I2t monitoring of the motor (refer to p0611). This parameter is not used for induction motors (p0300 = 1xx).

**p0320[0...n]**  
**Motor rated magnetizing current/short-circuit current / Mot I_mag_rated**  
**VECTOR_G**  
Can be changed: C2(3), U, T  
Data type: FloatingPoint32  
P-Group: Motor  
Not for motor type: REL, FEM  
Min: 0.000 [Arms]  
Max: 5000.000 [Arms]  
Factory setting: 0.000 [Arms]

**Description:**  
Sets the rated motor magnetizing current.  
For p0320 = 0.000 the magnetizing current is internally calculated and displayed in r0331.  
Synchronous motors:  
Sets the rated motor short-circuit current.  
Caution:  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**  
The magnetization current p0320 for induction motors (not for catalog motors) is reset when quick commissioning is exited with p3900 > 0.  
VECTOR:  
If, for induction motors, the magnetizing current p0320 is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance p0360 is changed so that the EMF r0337 remains constant.

**p0322[0...n]**  
**Maximum motor speed / Mot n_max**  
**VECTOR_G**  
Can be changed: C2(1, 3)  
Data type: FloatingPoint32  
P-Group: Motor  
Not for motor type: -  
Min: 0.0 [rpm]  
Max: 210000.0 [rpm]  
Factory setting: 0.0 [rpm]

**Description:**  
Sets the maximum motor speed.  
**Dependency:**  
Refer to: p1082  
**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Notice:**  
If p0322 is changed during quick commissioning (p0010 = 1), the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>P-Group</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0323[0...n]</td>
<td>Maximum motor current / Mot I_max</td>
<td>C2(1, 3)</td>
<td>-</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>5722</td>
<td>Motor</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [Arms]</td>
<td>20000.00 [Arms]</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td></td>
<td></td>
<td>Sets the maximum permissible motor current (e.g. de-magnetizing current for synchronous motors).</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Caution:</strong></td>
<td></td>
<td></td>
<td>When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td></td>
<td></td>
<td>If p0323 is changed during quick commissioning (p0010 = 1), then the maximum current p0640 is pre-assigned accordingly. This is not the case when commissioning the motor (p0010 = 3).</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td>The parameter has no effect for induction motors. The parameter has no effect for synchronous motors if a value of 0.0 is entered. The user-selectable current limit is entered into p0640.</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

| p0324[0...n] | Winding maximum speed / Winding n_max | C2(1, 3) | - | 2 | FloatingPoint32 | MDS, p0130 | - | Motor | - | - | 1 | 0.0 [rpm] | 20000.00 [rpm] | 0.00 [rpm] |
| **Description:** | | | Sets the maximum speed for the winding. | | | | | | | | | | |
| **Dependency:** | | | Refer to: p1082 | | | | | | | | | | |
| **Caution:** | | | When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection. | | | | | | | | | | |
| **Notice:** | | | If p0324 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). | | | | | | | | | | |

| p0325[0...n] | Motor pole position identification current, 1st phase / Mot PolID I 1st ph | U, T | - | 3 | FloatingPoint32 | MDS, p0130 | - | Motor | - | - | 1 | 0.000 [Arms] | 10000.000 [Arms] | 0.000 [Arms] |
| **Description:** | | | Sets the current for the 1st phase of the two-stage technique for pole position identification routine. The current of the 2nd phase is set in p0329. The two-stage technique is selected with p1980 = 4. | | | | | | | | | | |
| **Notice:** | | | When the motor code (p0301) is changed, it is possible that p0325 is not pre-assigned. p0325 can be pre-assigned using p0340 = 3. | | | | | | | | | | |
| **Note:** | | | The value is automatically pre-assigned for the following events: - For p0325 = 0 and automatic calculation of the closed-loop control parameters (p0340 = 1, 2, 3). - for quick commissioning (p3900 = 1, 2, 3). | | | | | | | | | | |
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0327[0...n]</td>
<td><strong>Optimum motor load angle / Mot phi_load opt</strong>&lt;br&gt;Can be changed: C2(3), U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Motor&lt;br&gt;Not for motor type: ASM, REL, FEM&lt;br&gt;Min: 0.0 [°]&lt;br&gt;Max: 135.0 [°]&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: 90.0 [°]&lt;br&gt;Access level: 3&lt;br&gt;Units group: -&lt;br&gt;Dependency: p0130, p1980, p1982, r1984, r1985, r1987, p1990</td>
</tr>
<tr>
<td>p0328[0...n]</td>
<td><strong>Motor reluctance torque constant / Mot kT_reluctance</strong>&lt;br&gt;Can be changed: C2(3), U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Motor&lt;br&gt;Not for motor type: ASM, REL, FEM&lt;br&gt;Min: -1000.00 [mH]&lt;br&gt;Max: 1000.00 [mH]&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: 0.00 [mH]&lt;br&gt;Access level: 3&lt;br&gt;Units group: -&lt;br&gt;Dependency: r0330, r1980, r1982, r1984, r1985, r1987, r1990</td>
</tr>
<tr>
<td>p0329[0...n]</td>
<td><strong>Motor pole position identification current / Mot PolID current</strong>&lt;br&gt;Can be changed: C2(3), U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Motor&lt;br&gt;Not for motor type: ASM, REL, FEM&lt;br&gt;Min: 0.00 [Arms]&lt;br&gt;Max: 10000.00 [Arms]&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: 0.00 [Arms]&lt;br&gt;Access level: 3&lt;br&gt;Units group: -&lt;br&gt;Dependency: r0330, r1980, r1982, r1984, r1985, r1987, r1990</td>
</tr>
<tr>
<td>r0330[0...n]</td>
<td><strong>Rated motor slip / Mot slip_rated</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Motor&lt;br&gt;Not for motor type: PEM, REL, FEM&lt;br&gt;Min: -1.00 [Hz]&lt;br&gt;Max: -1.00 [Hz]&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: -1.00 [Hz]&lt;br&gt;Access level: 3&lt;br&gt;Units group: -</td>
</tr>
</tbody>
</table>

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1-125
Dependency: The rated slip is calculated from the rated frequency, rated speed and number of pole pairs.
Refer to: p0310, p0311, r0313
Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0331[0...n] Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act
VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: MDS, p0130 Func. diagram: 5722, 6722, 6724
P-Group: Motor Units group: - Unit selection: -
Not for motor type: REL, FEM Scaling: - Expert list: 1
Min Max Factory setting
- [Arms] - [Arms]
Description: Induction motor:
Displays the rated magnetizing current from p0320.
For p0320 = 0, the internally calculated magnetizing current is displayed.
Synchronous motor:
Displays the rated short-circuit current from p0320.
Dependency: If p0320 was not entered, then the parameter is calculated from the rating plate parameters.
Note: In the case of multi-motor operation r0331 is increased by the factor p0306 compared to p0320.

r0332[0...n] Rated motor power factor / Mot cos_phi_rated
VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: MDS, p0130 Func. diagram: -
P-Group: Motor Units group: - Unit selection: -
Not for motor type: PEM, REL Scaling: - Expert list: 1
Min Max Factory setting
- -
Description: Displays the rated power factor for induction motors.
For IEC motors, the following applies (p0100 = 0):
For p0308 = 0, the internally-calculated power factor is displayed.
For p0308 > 0, this value is displayed.
For NEMA motors, the following applies (p0100 = 1):
For p0308 = 0, the internally-calculated power factor is displayed.
For p0308 > 0, this value is converted into the power factor and displayed.
Dependency: If p0308 was not entered, then the parameter is calculated from the rating plate parameters.
Note: The parameter is not used for synchronous motors (p0300 = 2xx).

r0333[0...n] Rated motor torque / Mot M_rated
VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: MDS, p0130 Func. diagram: -
P-Group: Motor Units group: 7_4 Unit selection: p0100
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- [Nm] - [Nm]
Description: Displays the rated motor torque.
Dependency: IEC drives (p0100 = 0): unit Nm
NEMA drives (p0100 = 1): unit lbf ft
Note: For induction and reluctance motors, r0333 is calculated from p0307 and p0311.
For synchronous motors, r0333 is calculated from p0305, p0316, p0327 and p0328. The result can deviate from the input in p0312. If p0316 = 0, then r0333 = p0312 is displayed.
In the case of multi-motor operation r0333 is increased by the factor p0306 compared to the rated torque of an individual motor.
### List of parameters

#### r0334[0...n] Actual motor-torque constant / Mot kT act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0334</td>
<td>Displays the torque constant of the synchronous motor used.</td>
<td></td>
<td>IEC drives (p0100 = 0): unit Nm / A NEMA drives (p0100 = 1): unit lbf ft / A</td>
<td>This parameter is not used for induction motors (p0300 = 1xx). For synchronous motors, parameter r0334 = p0316 is displayed. For p0316 = 0, r0334 is calculated from p0305 and p0312 or p0305, p0307, and p0311.</td>
</tr>
</tbody>
</table>

#### p0335[0...n] Motor cooling type / Motor cooling type

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0335</td>
<td>Sets the motor cooling system used.</td>
<td></td>
<td>For 1LA5 and 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.</td>
<td>When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection. The parameter influences the thermal 3-mass motor model. 1LA1 and 1LA8 motors are characterized by the fact that they have an internal rotor fan. This &quot;internal cooling&quot; lies within the motor frame and is not visible. Air is not directly exchanged with the motor ambient air. For 1PQ8 motors, p0335 should be set to 5 as these motors are force-ventilated motors. p0335 = 128 applies for 1LA7 motors, frame size 56. These are operated without a fan.</td>
</tr>
</tbody>
</table>

#### r0336[0...n] Actual rated motor frequency / Mot f_rated act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0336</td>
<td>Displays the rated frequency of the motor.</td>
<td></td>
<td>For p0310 &gt; 0, this value is displayed.</td>
<td>For p0310 = 0 or for synchronous motors, the rated motor frequency r0336 is calculated from the rated speed and the pole pair number. For p0310 &gt; 0, this value is displayed (not for synchronous motors).</td>
</tr>
</tbody>
</table>
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0337[0...n]</strong></td>
<td>Rated motor EMF / Mot EMF_rated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>- [Vrms]</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td><strong>r0339[0...n]</strong></td>
<td>Rated motor voltage / Mot U_rated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>- [Vrms]</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td><strong>p0340[0...n]</strong></td>
<td>Automatic calculation, motor/control parameters / Calc auto par</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(3), T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Setting to automatically calculate motor parameters and U/f open-loop and closed-loop control parameters from the rating plate data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value</strong></td>
<td>0: No calculation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Complete calculation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Calculation of equivalent circuit diagram parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: Calculation of closed-loop control parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: Calculation of controller parameters</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5: Calculation of technological limits and threshold values</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice</strong></td>
<td>After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The following parameters are influenced using p0340:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The parameters designated with (*) are not overwritten for catalog motors (p0300 &gt; 100).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SERVO:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0340 = 1:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--&gt; All of the parameters influenced for p0340 = 2, 3, 4, 5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--&gt; p0341 (*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0340 = 2:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--&gt; p0350 (<em>), p0354 (</em>), p0356 (<em>), p0358 (</em>), p0360 (*)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--&gt; p0625 (matching p0350), p0626 ... p0628</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parameters

List of parameters

p0340 = 3:
--> All of the parameters influenced for p0340 = 4, 5
--> p0325 (is only calculated for p0325 = 0)
--> p0348 (*) (is only calculated for p0348 = 0)
--> p0441, p0442, p0443, p0444, p0445 (only for 1FT6, 1FK6, 1FK7 motors)
--> p0492, p1082, p1980, p1319, p1326, p1327, p1612, p1752, p1755

p0340 = 4:
--> p1461 (for p0348 > p0322, p1461 is set to 100 %)
--> p1463 (for p0348 > p0322, p1463 is set to 400 %)

p0340 = 5:
--> p1037, p1038, p1520, p1521, p1530, p1531, p2140 ... p2142, p2148, p2150, p2155, p2161, p2162, p2163, p2164, p2175, p2177, p2194, p3820 ... p3829

VECTOR:
p0340 = 1:
--> All of the parameters influenced for p0340 = 2, 3, 4, 5
--> p0341 (*)

p0340 = 2:
--> p0350 (*), p0354 ... p0361 (*), p0652 ... p0660
--> p0625 (matching p0350)

p0340 = 3:
--> All of the parameters influenced for p0340 = 4, 5
--> p0346, p0347, p0492, p0622, p1262, p1320 ... p1327, p1582, p1584, p1612, p1616, p1744, p1748, p1749, p1755, p1756, p2178

p0340 = 4:

p0340 = 5:
--> p260 ... p264, p1037, p1038, p1520, p1521, p1530, p1531, p1574, p1750, p1802, p1803, p2140, p2142, p2148, p2150, p2161, p2162, p2163, p2164, p2175, p2177, p2194, p3208, p3815, p3820 ... p3829

Note:
p0340 = 1 contains the calculations of p0340 = 2, 3, 4, 5 without overwriting the motor parameters from the Siemens motor lists (p0301 > 0).

p0340 = 2 calculates the motor parameters (p0350 ... p0360), but only if it does involve a Siemens catalog motor (p0301 = 0).

p0340 = 3 contains the calculations of p0340 = 4, 5.

p0340 = 4 only calculates the controller parameters.

p0340 = 5 only calculates the controller limits.

When quick commissioning is exited using p3900 > 0, p0340 is automatically set to 1.

At the end of the calculations, p0340 is automatically set to 0.

If the STARTER commissioning software writes a 3 into p0340 when "downloading to target device", then this corresponds to a "complete calculation of the motor/control parameters without equivalent circuit diagram data". The same calculations are carried out as for p0340 = 1, however, without the equivalent circuit diagram parameters of the motor (p0340 = 2), the motor moment of inertia and the motor weight (p0344).

For third-party linear synchronous motors (p0300 = 4) equivalent circuit diagram data are not calculated (p0340 = 2).
**p0341[0...n]**  
**Motor moment of inertia / Mot M_mom of inert**

**VECTOR_G**  
Can be changed: C2(3), U, T  
Calculated: CALC_MOD_ALL  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: MDS, p0130  
Func. diagram: 1700, 5042, 5210, 6030, 6031  
P-Group: Motor  
Units group: 25_1  
Unit selection: p0100  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min  
Max  
0.000000 [kgm²]  
10000.000000 [kgm²]  
0.000000 [kgm²]

**Description:** Sets the motor moment of inertia (without load).

**Dependency:**  
IEC drives (p0100 = 0): unit kg m²  
NEMA drives (p0100 = 1): unit lb ft²

The parameter value is included, together with p0342, in the rated starting time of the motor.

**Caution:** When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**

SERVO:  
p0341 * p0342 + p1498 influence the speed/torque pre-control in encoderless operation.

VECTOR:  
The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

---

**p0342[0...n]**  
**Ratio between the total and motor moment of inertia / Mot MomInert Ratio**

**VECTOR_G**  
Can be changed: C2(3), U, T  
Calculated: CALC_MOD_ALL  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: MDS, p0130  
Func. diagram: 1700, 5042, 5210, 6030, 6031  
P-Group: Motor  
Units group: -  
Unit selection: -  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min  
Max  
1.000  
10000.000  
1.000

**Description:** Sets the ratio between the total moment of inertia/mass (load + motor) and the intrinsic motor moment of inertia/mass (no load).

**Dependency:**  
This means that together with p0341, the rated starting (accelerating time) of the motor is calculated for a vector drive.

**Note:**

SERVO:  
p0341 * p0342 + p1498 influence the speed/torque pre-control in encoderless operation.

VECTOR:  
The product of p0341 * p0342 is used when the speed controller (p0340 = 4) is calculated automatically.

---

**r0343[0...n]**  
**Rated motor current identified / Mot I_rated ident**

**VECTOR_G**  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: FloatingPoint32  
Dynamic index: MDS, p0130  
Func. diagram: -  
P-Group: Motor  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min  
Max  
0.00 [Arms]  
10000.00 [Arms]  
- [Arms]

**Description:** Displays the identified rated motor current.
**Parameters**

**List of parameters**

### p0344[0...n] Motor weight (for the thermal motor model) / Mot weight th mod

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(3), T</td>
<td>CALC_MOD_ALL</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**Units group:** 27_1  
**Unit selection:** p0100  
**Expert list:** 1  
**Min**  
0.0 [kg]  
**Max**  
50000.0 [kg]  
**Factory setting**  
0.0 [kg]

**Description:** Sets the motor weight.

**Dependency:**  
IEC drives (p0100 = 0): unit kg  
NEMA drives (p0100 = 1): unit lb

**Caution:** When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:** The parameter influences the thermal 3 mass model of the induction motor. The parameter is not used for synchronous motors (p0300 = 2xx).

### r0345[0...n] Nominal motor starting time / Mot t_start_rated

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**Units group:**  
**Unit selection:** -  
**Expert list:** 1  
**Min**  
- [s]  
**Max**  
- [s]  
**Factory setting**  
- [s]

**Description:** Displays the rated motor starting time. This time corresponds to the time from standstill up to reaching the motor rated speed and the acceleration with motor rated torque (r0333).

**Dependency:**  
Refer to: r0313, r0333, r0336, p0341, p0342

### p0346[0...n] Motor excitation build-up time / Mot t_excitation

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(3), U, T</td>
<td>CALC_MOD_REG</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**Units group:**  
**Unit selection:** -  
**Expert list:** 1  
**Min**  
-20.000 [s]  
**Max**  
20.000 [s]  
**Factory setting**  
0.000 [s]

**Description:** Sets the excitation build-up time of the motor. This involves the delay time between enabling the pulses and enabling the ramp-function generator. The induction motor is magnetized during this time.

**Caution:** If there is insufficient magnetization under load or if the acceleration rate is too high, then an induction motor can stall (refer to the note). This is especially true for sensorless vector control or Uff control.

**Notice:**  
If the parameter is set to 0 s for separately-excited synchronous motors (p0300 = 5), then an excitation current setpoint is generated even if the drive is powered down. In the base speed range, this is the no-load excitation current (p0389). In the field-weakening range, the value is reduced with the inverse value of the actual speed. An excitation current setpoint is not generated during de-magnetizing (p0347) and if an encoder fault is detected. When starting an encoderless separately-excited synchronous motor with vector control from standstill, the rotor position is detected using the field current ramp. The length of the ramp is pre-assigned from the motor data for p0346 = 0 s. If it crystallizes out that this time is too short, then it can be extended by entering a negative value in p0346, whereby otherwise, the excitation behavior corresponds with that for p0346 = 0 s. For all other cases, p0346 is internally limited downwards to 0 s.

**Note:** The parameter is calculated using p0340 = 1, 3.

For induction motors, the result depends on the rotor time constant (r0384). If this time is excessively reduced, this can result in an inadequate magnetizing of the induction motor. This is the case if the current limit is reached while building up magnetizing. For induction motors, the parameter cannot be set to 0 s (internal limit: 0.1 * r0384).
For permanent-magnet synchronous motors and vector control, the value depends on the stator time constant (r0386). Here, it defines the time to establish the current for encoderless operation immediately after the pulses have been enabled.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0347</td>
<td>Motor de-excitation time / Mot t_de-excitat.</td>
<td>Can be changed: C2(3), U, T</td>
<td>Calculated: CALC_MOD_REG</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.000 [s]</td>
<td>20.000 [s]</td>
</tr>
</tbody>
</table>

Description: Sets the demagnetizing time (for induction motors) after the inverter pulses have been canceled. The inverter pulses cannot be switched in (enabled) within this delay time.

Note: The parameter is calculated using p0340 = 1, 3. For induction motors, the result depends on the rotor time constant (r0384). If this time is shortened too much, then this can result in an inadequate de-magnetizing of the induction motor and in an overcurrent condition when the pulses are subsequently enabled (only when the flying restart function is activated and the motor is rotating).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0349</td>
<td>System of units, motor equivalent circuit diagram data / Unit_sys mot ESB</td>
<td>Can be changed: C2(3)</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Description: Sets the actual system of units for motor equivalent circuit diagram data.

Value: 1: System of units, physical
2: System of units, referred

Dependency: Refer to: p0304, p0305, p0310

Note: The reference parameter for resistances of the rated motor impedance Z = p0304 / (1.732 * p0305) is in the % units system. Inductances are converted into a resistance using the factor 2 * Pi * p0310. If a reference parameter (p0304, p305, p0310) is zero, then it is not possible to make a changeover to "referred" values (per unit values).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0350</td>
<td>Motor stator resistance, cold / Mot R_stator cold</td>
<td>Can be changed: C2(3), U, T</td>
<td>Calculated: CALC_MOD_EQU</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: 16_1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.000000 [ohm]</td>
<td>2000.000000 [ohm]</td>
</tr>
</tbody>
</table>

Description: Sets the stator resistance of the motor at ambient temperature p0625 (phase value).

Dependency: Refer to: p0625, r1912

Caution: When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note: The motor identification routine determines the stator resistance from the total stator resistance minus the cable resistance (p0352).
List of parameters

Description:
Resistance of the power cable between the Motor Module and motor.

Dependency:
Refer to: p7003

Caution:
The cable resistance should be entered prior to motor data identification. If it is used subsequently, the difference by which p0352 was changed must be subtracted from the stator resistance p0350 or motor data identification must be repeated.

Notice:
Parallel circuits with one winding system (p7003 = 0):
p0352 includes the feeder cable resistance of an individual Motor Module. The total feeder cable resistance is obtained from p0352 divided by the number of activated Motor Modules (refer to r0395).

Parallel circuits with multi-winding system (p7003 = 1):
p0352 includes the complete feeder cable resistance and is directly added to the stator resistance (refer to r0395).

Note:
The parameter influences the temperature adaptation of the stator resistance.
The motor identification sets the cable resistance to 20% of the measured total resistance if p0352 is zero at the time that the measurement is made. If p0352 is not zero, then the value is subtracted from the measured total stator resistance to calculate stator resistance p0350. In this case, p0350 is a minimum of 10% of the measured value.

Exception:
For parallel circuit configurations with one winding system (p07003 = 0), the cable resistance is directly measured. It is important to note that only the component of an individual Motor Module is entered into p0352.
The cable resistance is reset when quick commissioning is exited with p3900 > 0.

Description:
Sets the series inductance.

Note:
For the automatic calculation with p0340 = 1, 3 or 4, the calculation of p1715 is influenced by p0353.
The series inductance is reset when quick commissioning is exited with p3900 > 0.

Description:
Sets the rotor/secondary section resistance of the motor at the ambient temperature p0625.

For separately-excited synchronous motors: Sets the damping resistance in the rotor direction (d-axis).

This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor data identification routine (p1910) (not for separately-excited synchronous motors).

Dependency:
Refer to: p0625

Caution:
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note:
The parameter is not used for synchronous motors (p0300 = 2xx).
**Parameters**

**List of parameters**

### p0355[0...n] Motor damping resistance, q axis / Mot R_damp q

**TYPE:** VECTOR_G  
**Can be changed:** C2(3), U, T  
**Calculated:** CALC_MOD_EQU  
**Access level:** 3  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** 6727  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** ASM, PEM, REL  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.00000 [ohm]  
**Max**  
300.00000 [ohm]  
**Factory setting**  
0.00000 [ohm]  

**Description:**  
Sets the damping resistance of the separately-excited synchronous motor quadrature to the rotor direction (q axis). This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

### p0356[0...n] Motor stator leakage inductance / Mot L_stator leak.

**TYPE:** VECTOR_G  
**Can be changed:** C2(3), U, T  
**Calculated:** CALC_MOD_EQU  
**Access level:** 3  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 15_1  
**Unit selection:** p0349  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.00000 [mH]  
**Max**  
1000.00000 [mH]  
**Factory setting**  
0.00000 [mH]  

**Description:**  
Induction motor, separately-excited synchronous motor: Sets the rotor leakage inductance of the motor. Synchronous motor: Sets the stator quadrature axis inductance of the motor. This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

**Caution:**  
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**  
If the stator leakage inductance (p0356) for induction motors is changed outside the commissioning phase (p0010 > 0), the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is, therefore, ideal for a low current.

### p0357[0...n] Motor stator inductance, d axis / Mot L_stator d

**TYPE:** VECTOR_G  
**Can be changed:** C2(3), U, T  
**Calculated:** CALC_MOD_EQU  
**Access level:** 3  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 15_1  
**Unit selection:** p0349  
**Not for motor type:** ASM, REL, FEM  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.00000 [mH]  
**Max**  
1000.00000 [mH]  
**Factory setting**  
0.00000 [mH]  

**Description:**  
Sets the stator direct-axis inductance of the synchronous motor. This parameter value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910).

**Note:**  
The parameter is not used for separately-excited synchronous motors (p0300 = 5).

For permanent-magnet synchronous motors (p0300 = 2), this is the non-saturated value and is ideal for a low current.

### p0358[0...n] Motor rotor leakage inductance / damping inductance, d axis / Mot L_r leak / LDd

**TYPE:** VECTOR_G  
**Can be changed:** C2(3), U, T  
**Calculated:** CALC_MOD_EQU  
**Access level:** 3  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** 6727  
**P-Group:** Motor  
**Units group:** 15_1  
**Unit selection:** p0349  
**Not for motor type:** PEM, REL  
**Scaling:** -  
**Expert list:** 1  
**Min**  
0.00000 [mH]  
**Max**  
1000.00000 [mH]  
**Factory setting**  
0.00000 [mH]  

**Description:**  
Sets the rotor/secondary section leakage inductance of the motor. For separately-excited synchronous motors: Sets the damping inductance in the rotor direction (d-axis).
This value is automatically calculated using the motor model (p0340 = 1, 2) or using the motor identification routine (p1910) (not for separately-excited synchronous motors).

Caution:
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

Note:
The parameter is not used for synchronous motors (p0300 = 2xx).

VECTOR:
If the rotor leakage inductance (p0358) for induction motors is changed outside the commissioning phase (p0010 > 0), then the magnetizing inductance (p0360) is automatically adapted to the new EMF (r0337). You are then advised to repeat the measurement for the saturation characteristic (p1960).

**p0359[0...n]**  
**Motor damping inductance, q axis / Mot L_damp q**

**Description:**
Sets the damping inductance of the separately-excited synchronous motor quadrature to the rotor direction (q axis).  
This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

**Can be changed:** C2(3), U, T  
**Data type:** FloatingPoint32  
**P-Group:** Motor  
**Not for motor type:** ASM, PEM, REL  
**Min:** 0.00000 [mH]  
**Max:** 1000.00000 [mH]  
**Factory setting:** 0.00000 [mH]

**VECTOR_G**

**Calculated:** CALC_MOD_EQU  
**Dynamic index:** MDS, p0130  
**Unit group:** 15_1  
**Unit selection:** p0349  
**Expert list:** 1

**Access level:** 3  
**Func. diagram:** 6727

**p0360[0...n]**  
**Motor magnetizing inductance/magn. inductance, d axis saturated / Mot Lh/Lh d sat**

**Description:**
Sets the magnetizing inductance of the separately-excited synchronous motor to the rotor direction (d-axis).

**Can be changed:** C2(3), U, T  
**Data type:** FloatingPoint32  
**P-Group:** Motor  
**Not for motor type:** PEM, REL  
**Min:** 0.00000 [mH]  
**Max:** 10000.00000 [mH]  
**Factory setting:** 0.00000 [mH]

**VECTOR_G**

**Calculated:** CALC_MOD_EQU  
**Dynamic index:** MDS, p0130  
**Unit group:** 15_1  
**Unit selection:** p0349  
**Expert list:** 1

**Access level:** 3  
**Func. diagram:** 6727

**p0361[0...n]**  
**Motor magnetizing inductance q axis, saturated / Mot L_magn q sat**

**Description:**
Sets the saturated magnetizing inductance of the separately-excited synchronous motor quadrature to the rotor direction (q axis).  
This parameter value is automatically calculated using the motor model (p0340 = 1, 2).

**Can be changed:** C2(3), U, T  
**Data type:** FloatingPoint32  
**P-Group:** Motor  
**Not for motor type:** ASM, PEM, REL  
**Min:** 0.00000 [mH]  
**Max:** 10000.00000 [mH]  
**Factory setting:** 0.00000 [mH]

**VECTOR_G**

**Calculated:** CALC_MOD_EQU  
**Dynamic index:** MDS, p0130  
**Unit group:** 15_1  
**Unit selection:** p0349  
**Expert list:** 1

**Access level:** 3  
**Func. diagram:** 6727
**p0362[0...n]** Motor saturation characteristic flux 1 / Mot saturat.flux 1

**VECTOR_G**

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<td>300.0 [%]</td>
<td>60.0 [%]</td>
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**Description:**
The saturation characteristic (flux as mapping of current) is defined using 4 points.
This parameter specifies the y coordinate (flux) for the 1st value pair of the characteristic.
Induction motors (ASM) and separately-excited synchronous motors (SESM):
- The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.
- The parameter sets the first motor flux as a [%] referred to the rated motor flux.
Permanent-magnet synchronous motors (PESM):
- The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.
- The parameter sets the first stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

**Dependency:**
The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
The following applies for the stator quadrature axis flux values (PESM):
20% < p0362 < p0363 < p0364 < p0365
Refer to: p0366

**Caution:**
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

**Note:**
For induction motors, p0362 = 100 % corresponds to the rated motor flux.
For separately-excited synchronous motors p0362 = 100 % corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).
With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

**p0363[0...n]** Motor saturation characteristic flux 2 / Mot saturat.flux 2

**VECTOR_G**

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<td>Max</td>
<td>Factory setting</td>
<td></td>
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<td>85.0 [%]</td>
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</tr>
</tbody>
</table>

**Description:**
The saturation characteristic (flux as mapping of current) is defined using 4 points.
This parameter specifies the y coordinate (flux) for the 2nd value pair of the characteristic.
Induction motors (ASM) and separately-excited synchronous motors (SESM):
- The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.
- The parameter sets the second motor flux as a [%] referred to the rated motor flux.
Permanent-magnet synchronous motors (PESM):
- The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.
- The parameter sets the second stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.
List of parameters

Dependency:
The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
The following applies for the stator quadrature axis flux values (PESM):
20% < p0362 < p0363 < p0364 < p0365
Refer to: p0367

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated
quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
For induction motors, p0363 = 100 % corresponds to the rated motor flux.
For separately-excited synchronous motors p0363 = 100% corresponds to an induced terminal voltage with the
magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).
With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated
quadrature inductance (p0356) and the rated motor current (p0305).
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been
selected (refer to p0300).

p0364[0...n] Motor saturation characteristic flux 3 / Mot saturat. flux 3
VECTOR_G
Can be changed: C2(3), U, T
Data type: FloatingPoint32
P-Group: Motor
Not for motor type: -
Min
10.0 [%]

Calculated: -
Dynamic index: MDS, p0130
Units group: -
Scaling: -
Max
300.0 [%]

Access level: 3
Func. diagram: 6723, 6726
Unit selection: -
Expert list: 1
Factory setting
115.0 [%]

Description:
The saturation characteristic (flux as mapping of current) is defined using 4 points.
This parameter specifies the y coordinate (flux) for the 3rd value pair of the characteristic.
Induction motors (ASM) and separately-excited synchronous motors (SESM):
The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.
The parameter sets the third motor flux as a [%] referred to the rated motor flux.
Permanent-magnet synchronous motors (PESM):
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature
axis flux.
The parameter sets the third stator quadrature axis flux as a [%] referred to the product of the unsaturated quadra-
ture inductance (p0356) and the rated motor current.

Dependency:
The following applies for the flux values:
p0362 < p0363 < p0364 < p0365
The following applies for the stator quadrature axis flux values (PESM):
20% < p0362 < p0363 < p0364 < p0365
Refer to: p0368

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated
quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
For induction motors, p0364 = 100 % corresponds to the rated motor flux.
For separately-excited synchronous motors p0364 = 100% corresponds to an induced terminal voltage with the
magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).
With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated
quadrature inductance (p0356) and the rated motor current (p0305).
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been
selected (refer to p0300).
**Parameters**

**List of parameters**

---

### p0365[0...n]  
**Motor saturation characteristic flux 4 / Mot saturat. flux 4**

**VECTOR_G**  
Can be changed: C2(3), U, T  
Calculated: -  
Access level: 3  

**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** 6723, 6726  
**P-Group:** Motor  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** 10.0 [%]  
**Max:** 300.0 [%]  
**Factory setting:** 125.0 [%]

**Description:**  
The saturation characteristic (flux as mapping of current) is defined using 4 points.  
This parameter specifies the y coordinate (flux) for the 4th value pair of the characteristic.  
Induction motors (ASM) and separately-excited synchronous motors (SESM):  
The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.  
The parameter sets the fourth motor flux as a [%] referred to the rated motor flux.  
Permanent-magnet synchronous motors (PESM):  
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.  
The parameter sets the fourth stator quadrature axis flux as a [%] referred to the product of the unsaturated quadrature inductance (p0356) and the rated motor current.

**Dependency:**  
The following applies for the flux values:  
p0362 < p0363 < p0364 < p0365

The following applies for the stator quadrature axis flux values (PESM):  
20% < p0362 < p0363 < p0364 < p0365

Refer to: p0369

**Caution:**  
For permanent-magnet synchronous motors (PESM):  
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

**Note:**  
For induction motors, p0365 = 100 % corresponds to the rated motor flux.  
For separately-excited synchronous motors p0365 = 100% corresponds to an induced terminal voltage with the magnitude of the rated motor voltage (under no-load conditions at the synchronous speed).  
With permanent-magnet synchronous motors, p0362 = 100 % corresponds to the product of the unsaturated quadrature inductance (p0356) and the rated motor current (p0305).  
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

---

### p0366[0...n]  
**Motor saturation characteristic I_mag 1 / Mot sat. I_mag 1**

**VECTOR_G**  
Can be changed: C2(3), U, T  
Calculated: -  
Access level: 3  

**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** 6723, 6726  
**P-Group:** Motor  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** 5.0 [%]  
**Max:** 800.0 [%]  
**Factory setting:** 50.0 [%]

**Description:**  
The saturation characteristic (flux as mapping of current) is defined using 4 points.  
This parameter specifies the x coordinate for the 1st value pair of the characteristic.  
Induction motors (ASM) and separately-excited synchronous motors (SESM):  
The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.  
The parameter sets the first magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM), which in turn is referred to the no-load excitation current (SESM).  
Permanent-magnet synchronous motors (PESM):  
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.  
The parameter sets the first stator quadrature axis current as a [%] referred to the rated motor current (p0305).
Dependency:
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
The following applies for the stator quadrature axis current values (PESM):
20% < p0366 < p0367 < p0368 < p0369
Refer to: p0362

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated
quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been
selected (refer to p0300).

| p0367[0...n] Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2 |
|-----------------------------|-----------------------------|-----------------------------|
| **VECTOR_G**               | **Can be changed:** C2(3), U, T | Calculated: - |
| **Data type:** FloatingPoint32 | **Dynamic index:** MDS, p0130 | **Func. diagram:** 6723, 6726 |
| **P-Group:** Motor          | **Units group:** -          | **Unit selection:** -       |
| **Not for motor type:** -   | **Scaling:** -              | **Expert list:** 1          |
| **Min**                     | **Max**                     | **Factory setting**         |
| 5.0 [%]                     | 800.0 [%]                   | 75.0 [%]                    |

Description:
The saturation characteristic (flux as mapping of current) is defined using 4 points.
This parameter specifies the x coordinate for the 2nd value pair of the characteristic.
Induction motors (ASM) and separately-excited synchronous motors (SESM):
The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.
The parameter sets the second magnetizing current as a [%] referred to the rated magnetizing current r0331
(ASM), which in turn is referred to the no-load excitation current (SESM).
Permanent-magnet synchronous motors (PESM):
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature
axis flux.
The parameter sets the second stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency:
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
The following applies for the stator quadrature axis current values (PESM):
20% < p0366 < p0367 < p0368 < p0369
Refer to: p0363

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated
quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been
selected (refer to p0300).

| p0368[0...n] Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3 |
|-----------------------------|-----------------------------|-----------------------------|
| **VECTOR_G**               | **Can be changed:** C2(3), U, T | Calculated: - |
| **Data type:** FloatingPoint32 | **Dynamic index:** MDS, p0130 | **Func. diagram:** 6723, 6726 |
| **P-Group:** Motor          | **Units group:** -          | **Unit selection:** -       |
| **Not for motor type:** -   | **Scaling:** -              | **Expert list:** 1          |
| **Min**                     | **Max**                     | **Factory setting**         |
| 5.0 [%]                     | 800.0 [%]                   | 150.0 [%]                    |

Description:
The saturation characteristic (flux as mapping of current) is defined using 4 points.
This parameter specifies the x coordinate for the 3rd value pair of the characteristic.
Induction motors (ASM) and separately-excited synchronous motors (SESM):
The saturation characteristic describes the mapping of the magnetizing current onto the motor flux.
The parameter sets the third magnetizing current as a [%] referred to the rated magnetizing current r0331 (ASM),
which in turn is referred to the no-load excitation current (SESM).
Permanent-magnet synchronous motors (PESM):
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.
The parameter sets the third stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency:
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
The following applies for the stator quadrature axis current values (PESM):
20% < p0366 < p0367 < p0368 < p0369
Refer to: p0364

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

| p0369[0...n] Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4 |
|-----------------|-----------------|-----------------|
| **Can be changed:** | C2(3), U, T     | **Access level:** | 3               |
| **Data type:**   | FloatingPoint32 | **Dynamic index:** | MDS, p0130     |
| **P-Group:**     | Motor           | **Func. diagram:** | 6723, 6726     |
| **Not for motor type:** | -             | **Units group:**   | -             |
| **Min** | 5.0 [%]     | **Scaling:** | -             |
| **Max** | 800.0 [%]   | **Expert list:** | 1             |
| **Factory setting** | 210.0 [%] | **Description:** | The saturation characteristic (flux as mapping of current) is defined using 4 points. |
| **Note:** | When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300). |

Permanent-magnet synchronous motors (PESM):
The saturation characteristic describes the mapping of the stator quadrature axis current onto the stator quadrature axis flux.
The parameter sets the fourth stator quadrature axis current as a [%] referred to the rated motor current (p0305).

Dependency:
The following applies for the magnetizing currents:
p0366 < p0367 < p0368 < p0369
The following applies for the stator quadrature axis current values (PESM):
20% < p0366 < p0367 < p0368 < p0369
Refer to: p0365

Caution:
For permanent-magnet synchronous motors (PESM):
If the parameters are not set as specified, i.e. not in ascending order and to more than 20 %, the unsaturated quadrature inductance (p0356) is always used for quadrature axis flux calculation purposes.

Note:
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

| r0370[0...n] Motor stator resistance, cold / Mot R_stator cold |
|-----------------|-----------------|-----------------|
| **Can be changed:** | -               | **Access level:** | 4               |
| **Data type:**   | FloatingPoint32 | **Dynamic index:** | MDS, p0130     |
| **P-Group:**     | Motor           | **Func. diagram:** | -             |
| **Not for motor type:** | -             | **Units group:**   | 16_1           |
| **Min** | - [ohm]     | **Scaling:** | - [ohm]       |
| **Max** | - [ohm]   | **Expert list:** | 1             |
| **Factory setting** | - [ohm] | **Description:** | Displays the motor stator resistance at an ambient temperature (p0625). |
| **Note:** | The value does not include the cable resistance. |

Dependency:
Refer to: p0625
### List of parameters

**r0372[0...n]**  
**Cable resistance / Mot R\_cable**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
- [ohm]  
**Max**  
- [ohm]  
**Factory setting**  
- [ohm]  
**Description:** Displays the total cable resistance between Motor Module and motor, as well as the internal converter resistance.  
**Dependency:** Refer to: r0238, p0352

**r0373[0...n]**  
**Motor rated stator resistance / Mot R\_stator rated**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** PEM, REL, FEM  
**Scaling:** -  
**Expert list:** 1  
**Min**  
- [ohm]  
**Max**  
- [ohm]  
**Factory setting**  
- [ohm]  
**Description:** Displays the rated motor stator resistance at rated temperature (total of p0625 and p0627).  
**Dependency:** Refer to: p0627  
**Note:** The parameter is not used for synchronous motors (p0300 = 2xx).

**r0374[0...n]**  
**Motor rotor resistance cold / damping resistance d axis / Mot R\_r cold / RDd**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** PEM, REL  
**Scaling:** -  
**Expert list:** 1  
**Min**  
- [ohm]  
**Max**  
- [ohm]  
**Factory setting**  
- [ohm]  
**Description:** Displays the rotor/secondary section resistance of the motor for the ambient temperature p0625.  
**Dependency:** Refer to: p0625  
**Note:** The parameter is not used for synchronous motors (p0300 = 2xx).

**r0375[0...n]**  
**Motor damping resistance, q axis / Mot R\_damp q**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** ASM, PEM, REL  
**Scaling:** -  
**Expert list:** 1  
**Min**  
- [ohm]  
**Max**  
- [ohm]  
**Factory setting**  
- [ohm]  
**Description:** Displays the damping resistance of the separately-excited synchronous motor quadrature to the rotor direction (q axis).  
**Dependency:**

**r0376[0...n]**  
**Rated motor rotor resistance / Mot R\_rotor rated**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** MDS, p0130  
**Func. diagram:** -  
**P-Group:** Motor  
**Units group:** 16_1  
**Unit selection:** p0349  
**Not for motor type:** PEM, REL, FEM  
**Scaling:** -  
**Expert list:** 1  
**Min**  
- [ohm]  
**Max**  
- [ohm]  
**Factory setting**  
- [ohm]  
**Description:** Displays the rated (nominal) rotor/secondary section resistance of the motor at the rated temperature (total of p0625 and p0628).
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Expert list</th>
<th>MIN</th>
<th>MAX</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0377[0...n]</td>
<td>Motor leakage inductance, total / Mot L_leak total</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td></td>
<td>- mH</td>
<td>- mH</td>
<td>- mH</td>
</tr>
<tr>
<td>r0378[0...n]</td>
<td>Motor stator inductance, d axis / Mot L_stator d</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td></td>
<td>- mH</td>
<td>- mH</td>
<td>- mH</td>
</tr>
<tr>
<td>r0380[0...n]</td>
<td>Motor damping inductance, d axis / Mot L_damping_d</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td></td>
<td>- mH</td>
<td>- mH</td>
<td>- mH</td>
</tr>
<tr>
<td>r0381[0...n]</td>
<td>Motor damping inductance, q axis / Mot L_damping_q</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td></td>
<td>- mH</td>
<td>- mH</td>
<td>- mH</td>
</tr>
</tbody>
</table>
### List of parameters

#### r0382[0...n]
**Motor magnetizing inductance transformed / Lh d axis saturated / Mot L_m tr/Lhd sat**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td>p0349</td>
<td>Displays the magnetizing inductance of the motor.</td>
<td>For separately-excited synchronous motors: Displays the saturated magnetizing inductance in the rotor direction (d-axis). The parameter is not used for synchronous motors (p0300 = 2xx).</td>
</tr>
<tr>
<td>Min</td>
<td>- [mH]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [mH]</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### r0383[0...n]
**Motor magnetizing inductance q axis, saturated / Mot L_magn q sat**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>15_1</td>
<td>p0349</td>
<td>Displays the saturated magnetizing inductance of a separately-excited synchronous motor quadrature to the rotor direction (q axis).</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [mH]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [mH]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

#### r0384[0...n]
**Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>-</td>
<td>Displays the rotor time constant. For separately-excited synchronous motors: Displays the damping time constant in the rotor direction (d-axis).</td>
<td>The parameter is not used for synchronous motors. The value is calculated from the total of the inductances on the rotor side (p0358, p0360) divided by the rotor/damping resistance (p0354). The temperature adaptation of the rotor resistance for induction motors is not taken into account.</td>
</tr>
<tr>
<td>Min</td>
<td>- [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</table>

#### r0385[0...n]
**Motor damping time constant, q axis / Mot L_damping q**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td></td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>-</td>
<td>Displays the damping time constant of a separately-excited synchronous motor quadrature to the rotor direction (q axis).</td>
<td>The value is calculated from the total of the inductances on the damping side (p0359, p0361) divided by the damping resistance (p0355).</td>
</tr>
<tr>
<td>Min</td>
<td>- [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Max</td>
<td>- [ms]</td>
<td></td>
<td></td>
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</tbody>
</table>
Parameters

List of parameters

r0386[0...n] Motor stator leakage time constant / Mot T_stator leak

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td>r0386</td>
<td>Motor stator leakage time constant / Mot T_stator leak</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Displays the stator leakage time constant.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The value is calculated from the total of all leakage inductances (p0233*, p0353, p0356, p0358) divided by the total of all motor resistances (p0350, p0352, p0354). The temperature adaptation of the resistances is not taken into account. * only applies for VECTOR (r0107).</td>
<td></td>
<td></td>
<td></td>
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</table>

r0387[0...n] Motor stator leakage time constant, q axis / Mot T_Sleak / T_Sq

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0387</td>
<td>Motor stator leakage time constant, q axis / Mot T_Sleak / T_Sq</td>
<td>4</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Displays the stator leakage time constant quadrature to the rotor direction (q axis).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The value is calculated from the total of all leakage inductances (p0233, p0356, p0359) divided by the total of all motor resistances (p0350, p0352, p0355). The temperature adaptation of the resistances is not taken into account.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

p0389[0...n] Excitation rated no-load current / Exc I_noload_rated

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0389</td>
<td>Excitation rated no-load current / Exc I_noload_rated</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>1</td>
<td>0.00 [A]</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1, 3) Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [A] 10000.00 [A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p0390[0...n] Rated excitation current / Exc I_rated

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0390</td>
<td>Rated excitation current / Exc I_rated</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>1</td>
<td>0.00 [A]</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1, 3) Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [A] 10000.00 [A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p0391[0...n] Current controller adaptation, starting point KP / I_adapt pt KP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0391</td>
<td>Current controller adaptation, starting point KP / I_adapt pt KP</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>1</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(3), U, T Calculated: CALC_MOD_REG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Arms] 6000.00 [Arms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the starting point of the current-dependent current controller adaptation where the current controller gain p1715 is effective.
### p0392[0...n]
**Current controller adaptation, starting point KP adapted / I_adapt pt KP adap**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Calculated: CALC_MOD_REG</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(3), U, T</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: 6714</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Min Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.00 [Arms]</td>
<td>6000.00 [Arms]</td>
<td>0.00 [Arms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the starting point of the current-dependent current controller adaptation where the adapted current controller gain \( p1715 \times p0393 \) is effective.

**Dependency:**
Refer to: p0391, p0392, p1402, p1715

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
When quick commissioning is exited with \( p3900 > 0 \), then the parameter is reset if a catalog motor has not been selected (refer to p0300).

### p0393[0...n]
**Current controller adaptation P gain scaling / I_adapt Kp scal**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Calculated: CALC_MOD_REG</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(3), U, T</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: 6714</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Min Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td>100.00 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the factor for the current controller P gain in the adaptation range (e.g. \( r0078 > p392 \), if \( p392 > p0391 \)). The value is referred to p1715.

**Dependency:**
Refer to: p0391, p0392, p1402, p1715

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
For \( p0393 = 100 \% \) or \( p1402.2 = 0 \), the current controller adaptation is disabled and p1715 is effective over the entire range.

When quick commissioning is exited with \( p3900 > 0 \), then the parameter is reset if a catalog motor has not been selected (refer to p0300).

### r0395[0...n]
**Actual stator resistance / R_stator act**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: 6300, 6730, 6731, 6732</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Units group: 16_1</td>
<td>Unit selection: p0349</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the actual stator resistance (phase value).

**Dependency:**
In the case of induction motors the parameter is also affected by the motor temperature model.

**Note:**
Refer to: p0350, p0352, p0620
### r0396[0...n] Actual rotor resistance / R_rotor_act

- **Vector_G**
  - **Can be changed:** -
  - **Data type:** FloatingPoint32
  - **P-Group:** Motor
  - **Not for motor type:** PEM, REL, FEM
  - **Min:** - [ohm]
  - **Max:** - [ohm]
  - **Access level:** 3
  - **Dependency:** Refer to: p0354, p0620
  - **Note:** In each case, only the rotor resistance of the active Motor Data Set is included with the rotor temperature of the thermal motor model.
  - **Description:** Displays the actual rotor/secondary section resistance (phase value). The parameter is affected by the motor temperature model.

### p0398[0...n] Angle magn decoupling (cross saturation) coeff 1 / Magn decoupl C1

- **Vector_G**
  - **Can be changed:** C2(3), U, T
  - **Data type:** FloatingPoint32
  - **P-Group:** Motor
  - **Not for motor type:** ASM, FEM
  - **Min:** -10.000000
  - **Max:** 10.000000
  - **Access level:** 4
  - **Dependency:** The magnetic cross coupling of the motor’s d and q axes caused by saturation (current-dependent) leads to an angle offset affecting the axis system d’q’; this decouples the magnetic quantities.
  - **Description:** The angle offset can be described as a 3rd order polynomial function of the load current consumed: $\phi_{Offset} = f(C1*iq + C3*iq^3)$
  - **Note:** This parameter is the coefficient C1; it describes the linear load impact effect.

### p0399[0...n] Angle magn decoupling (cross saturation) coeff 3 / Magn decoupl C3

- **Vector_G**
  - **Can be changed:** C2(3), U, T
  - **Data type:** FloatingPoint32
  - **P-Group:** Motor
  - **Not for motor type:** ASM, FEM
  - **Min:** -10.000000
  - **Max:** 10.000000
  - **Access level:** 4
  - **Dependency:** The magnetic cross coupling of the motor’s d and q axes caused by saturation (current-dependent) leads to an angle offset affecting the axis system d’q’; this decouples the magnetic quantities.
  - **Description:** The angle offset can be described as a 3rd order polynomial function of the load current consumed: $\phi_{Offset} = f(C1*iq + C3*iq^3)$
  - **Note:** This parameter is the coefficient C3; it describes the cubic load impact effect.

### p0400[0...n] Encoder type selection / Enc_typ sel

- **ENC**
  - **Can be changed:** C2(1, 4)
  - **Data type:** Integer16
  - **P-Group:** Encoder
  - **Not for motor type:** -
  - **Min:** 0
  - **Max:** 10100
  - **Access level:** 1
  - **Dependency:** Selects the encoder from the list of encoder types supported.
  - **Value:**
    - 0: No encoder
    - 202: DRIVE-CLiQ encoder AS20, singleturn
    - 204: DRIVE-CLiQ encoder AM20, multiturn 4096
    - 242: DRIVE-CLiQ encoder AS24, singleturn
    - 244: DRIVE-CLiQ encoder AM24, multiturn 4096
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description and Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1001: 1002: 1003: 1004:</td>
<td>Resolver 1 speed&lt;br&gt;Resolver 2 speed&lt;br&gt;Resolver 3 speed&lt;br&gt;Resolver 4 speed</td>
</tr>
<tr>
<td>2010:</td>
<td>18000, 1 Vpp, A/B R distance-coded</td>
</tr>
<tr>
<td>2051: 2052: 2053: 2054:</td>
<td>2048, 1 Vpp, A/B, EnDat, Multiturn 4096&lt;br&gt;32, 1 Vpp, A/B, EnDat, Multiturn 4096&lt;br&gt;512, 1 Vpp, A/B, EnDat, Multiturn 4096&lt;br&gt;16, 1 Vpp, A/B, EnDat, Multiturn 4096</td>
</tr>
<tr>
<td>2055:</td>
<td>2048, 1 Vpp, A/B, Singleturn 4096</td>
</tr>
<tr>
<td>2081: 2082: 2083: 2084:</td>
<td>2048, 1 Vpp, A/B, SSI, Multiturn 4096&lt;br&gt;2048, 1 Vpp, A/B, SSI, Singleturn&lt;br&gt;2048, 1 Vpp, A/B, SSI, Singleturn, error bit&lt;br&gt;2048, 1 Vpp, A/B, SSI, multturn 4096, error bit</td>
</tr>
<tr>
<td>2110: 2111: 2112: 2113:</td>
<td>4000 nm, 1 Vpp, A/B R distance-coded&lt;br&gt;20000 nm, 1 Vpp, A/B R distance-coded&lt;br&gt;40000 nm, 1 Vpp, A/B R distance-coded&lt;br&gt;16000 nm, 1 Vpp, A/B, EnDat, resolution 100 nm</td>
</tr>
<tr>
<td>3001: 3002: 3003:</td>
<td>1024 HTL A/B R&lt;br&gt;1024 TTL A/B R&lt;br&gt;2048 HTL A/B R</td>
</tr>
<tr>
<td>3004: 3005: 3006: 3007:</td>
<td>1024 HTL A/B&lt;br&gt;1024 TTL A/B&lt;br&gt;2048 HTL A/B&lt;br&gt;2048 TTL A/B</td>
</tr>
<tr>
<td>3008: 3009: 3010:</td>
<td>1024 HTL A/B unipolar&lt;br&gt;2048 HTL A/B unipolar&lt;br&gt;2048 TTL A/B, with sense</td>
</tr>
<tr>
<td>3011: 3012: 3013:</td>
<td>SSI, Singleturn, 24 V&lt;br&gt;SSI, Multiturn 4096, 24 V&lt;br&gt;4096, HTL, A/B, SSI, Singleturn</td>
</tr>
<tr>
<td>3090: 3100:</td>
<td>2000 nm, TTL, A/B R distance-coded&lt;br&gt;4096, Identify encoder&lt;br&gt;2000 nm, TTL, A/B R distance-coded&lt;br&gt;Identify encoder (waiting)</td>
</tr>
<tr>
<td>9999:</td>
<td>User-defined</td>
</tr>
</tbody>
</table>

**Caution:**

An encoder type with p0400 < 9999 defines an encoder for which there is an encoder parameter list. When selecting a catalog encoder (p0400 < 9999) the parameters from the encoder parameter list cannot be changed (write protection). To remove write protection, the encoder type should be set to a third-party encoder (p0400 = 9999).

**Note:**

The connected encoder can be identified by setting p0400 to 10000 or 10100. This assumes that the encoder supports this method, which is possible in the following cases: Motor with DRIVE-CLiQ, encoder with EnDat interface, DRIVE-CLiQ encoder.

The encoder data (e.g. pulse number p0408) can only be changed when p0400 = 9999.

When using an encoder with track A/B and zero pulse, as standard, fine synchronization is not set using a zero mark. If, for a synchronous motor, fine synchronization is to be realized using a zero mark, then the following must be executed:

- set p0400 to 9999
- set p0404.15 to 1

**Prerequisite:**

Coarse synchronization must be selected (e.g. pole position identification) and the zero pulse of the encoder must be either mechanically or electronically (p0431) adjusted to the pole position.
Parameters
List of parameters

For p0400 = 10000 the following applies:
If an identification is not possible, then p0400 is set to 0.
For p0400 = 10100 the following applies:
If an identification is not possible, p0400 remains set to 10100 until it becomes possible.

<table>
<thead>
<tr>
<th>p0400[0...n]</th>
<th>Encoder type selection / Enc_typ sel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>Selects the encoder from the list of encoder types supported.</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>10000</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>An encoder type with p0400 &lt; 9999 defines an encoder for which there is an encoder parameter list. When selecting a catalog encoder (p0400 &lt; 9999) the parameters from the encoder parameter list cannot be changed (write protection). To remove write protection, the encoder type should be set to a third-party encoder (p0400 = 9999).</td>
</tr>
<tr>
<td><strong>Caution:</strong></td>
<td>The connected encoder can be identified by setting p0400 to 10000 or 10100. This assumes that the encoder supports this method, which is possible in the following cases: Motor with DRIVE-CLiQ, encoder with EnDat interface, DRIVE-CLiQ encoder.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The encoder data (e.g. pulse number p0408) can only be changed when p0400 = 9999. When using an encoder with track A/B and zero pulse, as standard, fine synchronization is not set using a zero mark. If, for a synchronous motor, fine synchronization is to be realized using a zero mark, then the following must be executed: - set p0400 to 9999 - set p0404.15 to 1</td>
</tr>
<tr>
<td><strong>Prerequisite:</strong></td>
<td>Coarse synchronization must be selected (e.g. pole position identification) and the zero pulse of the encoder must be either mechanically or electronically (p0431) adjusted to the pole position.</td>
</tr>
<tr>
<td><strong>For p0400 = 10000 the following applies:</strong></td>
<td>If an identification is not possible, then p0400 is set to 0.</td>
</tr>
<tr>
<td><strong>For p0400 = 10100 the following applies:</strong></td>
<td>If an identification is not possible, p0400 remains set to 10100 until it becomes possible.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p0401[0...n]</th>
<th>Encoder type, OEM selection / Enc type OEM sel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>Selects the encoder from the list of encoder types that the OEM supports.</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>32767</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>The connected encoder can be identified by p0400 = 10000. This means that the encoder must support this and is possible in the following cases: Motor with DRIVE-CLiQ, encoder with EnDat interface.</td>
</tr>
</tbody>
</table>
If an identification is not possible, then p0400 is set to 0.
The encoder data (e.g. pulse number p0408) can only be changed when p0400 = 9999.
Using p0400 = 20000, the encoder type can be selected from the list of OEM encoders using p0401.

### p0402[0...n] Gearbox type selection / Gearbox type sel

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(1, 4)</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10100</td>
<td>9999</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Selects the gearbox type to pre-set the inversion and the gearbox factor.
Measuring gear factor = motor or load revolutions / encoder revolutions.

**Value:**
1: Gearbox 1:1 not inverted
2: Gearbox 2:7 inverted
3: Gearbox 4:17 inverted
4: Gearbox 2:10 inverted
9999: Gearbox, user-defined
10000: Identify gearbox
10100: Identify gearbox

**Dependency:**
Refer to: p0410, p0432, p0433

**Note:**
Re p0402 = 1:
Automatic setting of p0410 = 0000 bin, p0432 = 1, p0433 = 1.
Re p0402 = 2:
Automatic setting of p0410 = 0011 bin, p0432 = 7, p0433 = 2.
Re p0402 = 3:
Automatic setting of p0410 = 0011 bin, p0432 = 17, p0433 = 4.
Re p0402 = 4:
Automatic setting of p0410 = 0011 bin, p0432 = 10, p0433 = 2.
Re p0402 = 9999:
No automatic setting of p0410, p0432, p0433. The parameters should be manually set.
Re p0402 = 10000:
It is only possible to identify the gearbox type for a motor with DRIVE-CLiQ. Parameters p0410, p0432 and p0433 are set corresponding to the identified gearbox. If an identification is not possible, then p0402 is set to 9999.

### p0404[0...n] Encoder configuration effective / Enc_config eff

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: 4010, 4704</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0000 0000 0000 0000 0000</td>
<td></td>
</tr>
<tr>
<td>0000 0000 0000 bin</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Settings for the basic encoder properties.

**Bit field:**
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Linear encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Absolute encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Multiturn encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Track A/B sq-wave</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Track A/B sine</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Track C/D</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Hall sensor</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>EnDat encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>SSI encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DRIVE-CLiQ encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Digital encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

12 Equidistant zero mark Yes No -
13 Irregular zero mark Yes No -
14 Distance-coded zero mark Yes No -
15 Commutation with zero mark (not ASM) Yes No -
16 Acceleration Yes No -
17 Track A/B analog Yes No -
20 Voltage level 5 V Yes No -
21 Voltage level 24 V Yes No -
22 Remote sense (only SMC30) Yes No -
23 Resolver excit. Yes No -

Caution: This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

Notice: If an SSI encoder (bit 9 = 1) is used as motor encoder for permanent-magnet synchronous motors, then this is only permissible in conjunction with an additional A/B track (bit 3 = 1 or bit 4 = 1).

Note: ZM: Zero mark
SMC: Sensor Module Cabinet
If a technique to determine the commutation information/data has not been selected (e.g. track C/D, Hall sensor), and the encoder pulse number is an integer multiple of the pole number, then the following applies:
The track A/B is adjusted to match the magnetic position of the motor.
Re bit 01, 02 (absolute encoder, multiturn encoder):
These bits can only be selected for EnDat encoders, SSI encoders or DRIVE-CLiQ encoders.
Re bit 10 (DRIVE-CLiQ encoder):
This bit is only used for the large-scale integrated DRIVE-CLiQ encoders that provide their encoder data directly in DRIVE-CLiQ format without converting this data. This bit is not, therefore, set for first-generation DRIVE-CLiQ encoders.
Re bit 12 (equidistant zero mark):
The zero marks occur at regular intervals (e.g. rotary encoder with 1 zero mark per revolution or linear encoder with constant zero mark distance).
The bit activates monitoring of the zero mark distance (p0424/p0425, linear/rotary) or in the case of the linear encoder with 1 zero mark and p0424 = 0 zero mark monitoring is activated.
Re bit 13 (irregular zero mark):
The zero marks occur at irregular intervals (e.g. a linear scale with only 1 zero mark in the traversing range). The zero mark distance is not monitored.
Re bit 14 (distance-coded zero mark):
The distance (clearance) between two or several consecutive zero marks allows the absolute position to be calculated.
Re bit 15 (commutation with zero mark):
Only applicable for synchronous motors.
The function can be de-selected by priority via p0430.23.
For distance-coded zero marks, the following applies:
The phase sequence of the C/D track (if available) must be the same as the phase sequence of the encoder (A/B track).
The phase sequence of the Hall signal (if available) must be the same as the phase sequence of the motor. Further, the position of the Hall sensor must be mechanically adjusted to the motor EMF.
The fine synchronization is only started after two zero marks have been passed.

p0405[0...n] Square-wave encoder track A/B / Sq-wave enc A/B

ENC, VECTOR_G
Can be changed: C2(4) Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: EDS, p0140 Func. diagram: 4704
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - 0000 1111 bin

Description: Settings for the track A/B in a square-wave encoder.
For square-wave encoders, p0404.3 must also be 1.
### List of parameters

**p0407[0...n]** Linear encoder grid division / Enc grid div  
**ENC, VECTOR_G**  
Can be changed: C2(4)  
Data type: Unsigned32  
P-Group: Encoder  
Not for motor type: -  
Min 0 [nm]  
Max 250000000 [nm]  
Factory setting 16000 [nm]  
Access level: 3  
Dynamic index: EDS, p0140  
Units group: -  
Expert list: 1  
Factory setting  
Description: Sets the grid division for a linear encoder.  
Caution: This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.  
Note: The lowest permissible value is 250 nm.

**p0408[0...n]** Rotary encoder pulse No. / Rot enc pulse No.  
**ENC, VECTOR_G**  
Can be changed: C2(4)  
Data type: Unsigned32  
P-Group: Encoder  
Not for motor type: -  
Min 0  
Max 16777215  
Factory setting 2048  
Access level: 3  
Dynamic index: EDS, p0140  
Units group: -  
Expert list: 1  
Factory setting  
Description: Sets the number of pulses for a rotary encoder.  
Caution: This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.  
Note: The number of pole pairs for a resolver is entered here. The smallest permissible value is 1 pulse.

**p0410[0...n]** Encoder inversion actual value / Enc inv act value  
**ENC, VECTOR_G**  
Can be changed: C2(4)  
Data type: Unsigned16  
P-Group: Encoder  
Not for motor type: -  
Min -  
Max 0000 bin  
Access level: 3  
Dynamic index: EDS, p0140  
Units group: -  
Expert list: 1  
Factory setting  
Description: Setting to invert actual values.
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Invert speed actual value</td>
<td>Yes</td>
<td>No</td>
<td>4710, 4711, 4715</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Invert position actual value</td>
<td>Yes</td>
<td>No</td>
<td>4704</td>
</tr>
</tbody>
</table>

**Note:**
The inversion influences the following parameters:
- Bit 00: r0061, r0063 (exception: encoderless control), r0094
- Bit 01: r0482, r0483

### p0410[0...n]

**Encoder inversion actual value / Enc inv act value**

<table>
<thead>
<tr>
<th>ENC (Lin_enc)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C2(4)</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned16</td>
<td>EDS, p0140</td>
<td>4704, 4710, 4711, 4715</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0000 bin</td>
</tr>
</tbody>
</table>

**Description:**
Setting to invert actual values.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Invert velocity actual value</td>
<td>Yes</td>
<td>No</td>
<td>4710, 4711, 4715</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Invert position actual value</td>
<td>Yes</td>
<td>No</td>
<td>4704</td>
</tr>
</tbody>
</table>

**Note:**
The inversion influences the following parameters:
- Bit 00: r0061, r0063 (exception: encoderless control), r0094
- Bit 01: r0482, r0483

### p0411[0...n]

**Measuring gear, configuration / Meas gear config**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C2(4)</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned32</td>
<td>EDS, p0140</td>
<td>4704</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encoder</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0000 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for position tracking of a measuring gear.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Measuring gear, activate position tracking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Axis type</td>
<td>Linear axis</td>
<td>Rotary axis</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Measuring gear, reset position</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Meas. gearbox, activate pos. tracking for incremental encoders</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**
For p0411.3 = 1 the following applies:
If position tracking is activated for incremental encoders, only the position actual value is stored. Axis or encoder motion is not detected when de-activated! Any tolerance window entered in p0413 has no effect.

**Note:**
For the following events, the non-volatile, saved position values are automatically reset:
- when an encoder replacement has been identified.
- when changing the configuration of the Encoder Data Set (EDS).
### List of parameters

#### p0412[0...n]

**Measuring gear, absolute encoder, rotary, revolutions, virtual / Abs rot rev**

**ENC, VECTOR_G**

Can be changed: C2(4)

Data type: Unsigned32

P-Group: Encoder

Not for motor type: -

Min: 0

Max: 4194303

Factory setting: 0

**Description:** Sets the number of rotations that can be resolved for a rotary encoder with activated position tracking of the measuring gear.

**Dependency:**

This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking (p0411.0 = 1) and for an incremental encoder with activated position tracking (p0411.3 = 1).

**Note:**

The resolution that is set must be able to be represented using r0483.

For rotary axes/modulo axes, the following applies:

- **p0411.0 = 1:** This parameter is pre-set with p0421 and can be changed.
- **p0411.3 = 1:** The parameter value is pre-set to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

For linear axes, the following applies:

- **p0411.0 = 1:** This parameter is pre-assigned with p0421, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.
- **p0411.3 = 1:** The parameter value is pre-set to the highest possible value. The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

#### p0413[0...n]

**Measuring gear, position tracking tolerance window / Pos track window**

**ENC, VECTOR_G**

Can be changed: C2(4)

Data type: FloatingPoint32

P-Group: Encoder

Not for motor type: -

Min: 0.00

Max: 4294967300.00

Factory setting: 0.00

**Description:** Sets a tolerance window for position tracking.

After the system is powered up, the difference between the saved position and the actual position is determined, and depending on this, the following is initiated:

- Difference within the tolerance window → The position is reproduced as a result of the encoder actual value.
- Difference outside the tolerance window → An appropriate message is output.

**Dependency:**

Refer to: F31501, F32501, F33501

**Caution:** Rotation, e.g. through a complete encoder range is not detected.

**Note:**

The value is entered in integer (complete) encoder pulses.

For p0411.0 = 1, the value is automatically pre-assigned quarter of the encoder range.

Example:

Quarter of the encoder range = (p0408 * p0421) / 4

It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).
### p0414[0...n] Redundant coarse position value relevant bits (identified) / Relevant bits

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Redundant coarse position value relevant bits (identified) / Relevant bits</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Description
Sets the number of relevant bits for the redundant coarse position value.

#### Note
MSB: Most Significant Bit

#### Access level
3

#### Dynamic index
EDS, p0140

#### Value
0 16 16

#### Factory setting
0 16 16

### p0415[0...n] Gx_XIST1 Coarse position safe most significant bit (identified) / Gx_XIST1 safe MSB

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Gx_XIST1 Coarse position safe most significant bit (identified) / Gx_XIST1 safe MSB</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Description
Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

#### Note
MSB: Most Significant Bit

#### Access level
3

#### Dynamic index
EDS, p0140

#### Value
0 31 14

#### Factory setting
0 31 14

### p0416[0...n] Non safety-relevant meas. steps position value pos1 (detected) / nsrPos1

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Non safety-relevant meas. steps position value pos1 (detected) / nsrPos1</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Description
Sets the non safety-relevant measuring steps of POS1.

#### Dependency
Refer to: r0473, p9513

#### Value
4294967295 22000

#### Factory setting
4294967295 22000

### p0417[0...n] Encoder safety comparison algorithm (detected) / Safety CompAlgo

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Encoder safety comparison algorithm (detected) / Safety CompAlgo</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Description
Sets the the comparison algorithm for the encoder position monitoring functions.

#### Value
0: SMx20 safety algorithm
10: DQL binary safety algorithm
11: DQL linear non-binary safety algorithm
255: Safety algorithm unknown

#### Dependency
Refer to: p9541

### p0418[0...n] Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: 4010, 4704</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Description
Sets the fine resolution in bits of the incremental position actual values.

#### Value
2 18 11

#### Factory setting
2 18 11
Note:
The parameter applies for the following process data:
- Gx_XIST1
- Gx_XIST2 for reference mark or flying measurement

The fine resolution specifies the fraction between two encoder pulses. Depending on the physical measurement principle, an encoder pulse can be broken down into a different number of fractions (e.g. squarewave encoder: 2 bit = resolution 4, sin/cos encoder: Typical 11 bit = resolution 2048).

For a squarewave encoder, with the factory setting, the least significant bits have the value zero, i.e. they do not supply any useful information.

For especially high quality measuring systems, the fine resolution must be increased corresponding to the available accuracy.

### p0419[0...n]
**Fine resolution absolute value Gx_XIST2 (in bits) / Enc fine Gx_XIST2**

**ENC, VECTOR_G**

- **Can be changed:** C2(4)
- **Data type:** Unsigned8
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** 2
- **Max:** 18

**Description:**
Sets the fine resolution in bits of the absolute position actual values.

**Dependency:**
Refer to: p0418

**Note:**
This parameter applies to process data Gx_XIST2 when reading the absolute value.

### p0420[0...n]
**Encoder connection / Enc_connection**

**ENC, VECTOR_G**

- **Can be changed:** C2(4)
- **Data type:** Unsigned16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Selecting the encoder connection.

**Bit field:**
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>SUB-D</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Terminal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### p0421[0...n]
**Absolute encoder rotary multiturn resolution / Enc abs multiturn**

**ENC, VECTOR_G**

- **Can be changed:** C2(4)
- **Data type:** Unsigned16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** 0

**Description:**
Sets the number of rotations that can be resolved for a rotary absolute encoder.

**Caution:**
This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.
### p0422[0...n] Absolute encoder linear measuring step resolution / Enc abs meas step

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td>Sets the resolution of the absolute position for a linear absolute encoder.</td>
<td>This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.</td>
<td>The serial protocol of an absolute encoder provides the position with a certain resolution, e.g., 100 nm. This value must be entered here.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Encoder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 [nm]</td>
<td>4294967295 [nm]</td>
<td>100 [nm]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0423[0...n] Absolute encoder rotary singleturn resolution / Enc abs singleturn

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td>Sets the number of measuring steps per revolution for a rotary absolute encoder. The resolution refers to the absolute position.</td>
<td>This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Encoder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1073741823</td>
<td>8192</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0424[0...n] Encoder, linear zero mark distance / Enc lin ZM_dist

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td>Sets the distance between two zero marks for a linear encoder. This information is used for zero mark monitoring.</td>
<td>This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.</td>
<td>For distance-coded zero marks, this means the basic distance.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Encoder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 [mm]</td>
<td>65535 [mm]</td>
<td>20 [mm]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p0425[0...n] Encoder, rotary zero mark distance / Enc rot dist ZM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td>Sets the distance in pulses between two zero marks for a rotary encoder. This information is used for zero mark monitoring.</td>
<td>This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.</td>
<td>For distance-coded zero marks, this means the basic distance.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Encoder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>16777215</td>
<td>2048</td>
<td></td>
</tr>
</tbody>
</table>
### p0426[0...n] Encoder zero mark differential distance / Enc ZM Dif_dist

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>65535</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the differential distance with distance-coded zero marks [signal periods]. The value corresponds to jump displacement of "zero mark with interference".

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

### p0427[0...n] Encoder SSI baud rate / Enc SSI baud rate

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [kHz]</td>
<td>65535 [kHz]</td>
<td>100 [kHz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the baud rate for an SSI encoder.

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

**Note:** SSI: Synchronous Serial Interface

### p0428[0...n] Encoder SSI monoflop time / Enc SSI t_monoflop

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [µs]</td>
<td>65535 [µs]</td>
<td>30 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the minimum delay time between two data transfers of the absolute value for an SSI encoder.

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

### p0429[0...n] Encoder SSI configuration / Enc SSI config

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0000 0000 bin</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration for an SSI encoder.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Transfer code</td>
<td>Binary code</td>
<td>Gray code</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Transfer absolute value twice</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Data line during the monoflop time</td>
<td>High level</td>
<td>Low level</td>
<td>-</td>
</tr>
</tbody>
</table>

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Note:</th>
<th>Re bit 06:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The quiescent signal level of the data line corresponds to the inverted, set level.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p0430[0...n]</strong></th>
<th>Sensor Module configuration / SM config</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>ENC, VECTOR_G</td>
<td>Dynamic index: EDS, p0140</td>
</tr>
<tr>
<td>ENC, VECTOR_G</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>ENC, VECTOR_G</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: EDS, p0140</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1110 0000 0000 1000 0000</td>
</tr>
<tr>
<td>0000 0000 0000 bin</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:

Sets the configuration of the Sensor Module.

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Burst oversampling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Continuous oversampling (reserved)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Safety position actual value sensing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Speed calculation mode (only SMC30)</td>
<td>Incremental diff</td>
<td>Flank time meas</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Zero mark tolerance</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Rot pos adapt</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>De-select commutation with zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Commutation with selected zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>Switch off encoder voltage supply during parking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>Extrapolate position values</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Cubic correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Phase correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>Amplitude correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Offset correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Notice:

A bit-wise configuration is only possible if the corresponding property is also present in r0458.

#### Note:

- **Re bit 17 (burst oversampling):**
  - if bit = 1, burst oversampling is switched on.
  - if bit = 1, continuous oversampling is switched on.

- **Re bit 19 (Safety position actual value sensing):**
  - if bit = 1, the Safety position actual value is transferred in the cyclic telegram.

- **Re bit 20 (speed calculation mode):**
  - if bit = 1, the speed is calculated via incremental difference without extrapolation.
  - if bit = 0, the speed is calculated via edge time measurement with extrapolation, p0453 is effective in this mode.

- **Re bit 21 (zero mark tolerance):**
  - if bit = 1, a one-off zero mark distance error is tolerated. In the event of a defect, the fault F3x100/F3x101 does not appear, but alarm A3x400/A3x401 does.

- **Re bit 22 (rotor position adaptation):**
  - if bit = 1, the rotor position is corrected automatically. The correction speed is +/-1/4 encoder pulse per zero mark distance.

- **Re bit 23 (de-select commutation with zero mark):**
  - The bit should only be set for encoders that have not been adjusted.

- **Re bit 24 (commutation with selected zero mark):**
  - if bit = 1, the commutation position is corrected via a selected zero mark.

- **Re bit 25 (disconnect the encoder power supply on parking):**
  - if bit = 1, the encoder power supply is switched off on parking (0 V).
  - if bit = 0, the encoder power supply is not switched off on parking, it is reduced from 24 V to 5 V.

- **Re bit 27 (extrapolate position values):**
  - if bit = 1, the extrapolation of the position values is activated.

- **Re bit 28 (cubic correction):**
  - if bit = 1, the cubic correction for track A/B sine is activated.
### List of parameters

**Re bit 29 (phase correction):**
- if bit = 1, the phase correction for track A/B sine is activated.

**Re bit 30 (amplitude correction):**
- if bit = 1, the amplitude correction for track A/B sine is activated.

**Re bit 31 (offset correction):**
- if bit = 1, the offset correction for track A/B sine is activated.

---

### p0430[0...n] Sensor Module configuration / SM config

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Burst oversampling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Continuous oversampling (reserved)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Safety position actual value sensing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Velocity calculation mode (only SMC30)</td>
<td>Incremental diff</td>
<td>Flank time meas</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Zero mark tolerance</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Rot pos adapt</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>De-select commutation with zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Commutation with selected zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
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<td>Switch off encoder voltage supply during parking</td>
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<td>-</td>
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<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Cubic correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Phase correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>Amplitude correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Offset correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration of the Sensor Module.

**Notice:**
A bit-wise configuration is only possible if the corresponding property is also present in r0458.

**Note:**
- Re bit 17 (burst oversampling):
  - if bit = 1, burst oversampling is switched on.
- Re bit 18 (continuous oversampling):
  - if bit = 1, continuous oversampling is switched on.
- Re bit 19 (Safety position actual value sensing):
  - if bit = 1, the Safety position actual value is transferred in the cyclic telegram.
- Re bit 20 (speed calculation mode):
  - if bit = 1, the speed is calculated via incremental difference without extrapolation.
  - if bit = 0, the speed is calculated via edge time measurement with extrapolation. p0453 is effective in this mode.
- Re bit 21 (zero mark tolerance):
  - if bit = 1, a one-off zero mark distance error is tolerated. In the event of a defect, the fault F3x100/F3x101 does not appear, but alarm A3x400/A3x401 does.
- Re bit 22 (rotor position adaptation):
  - if bit = 1, the rotor position is corrected automatically. The correction speed is +/-1/4 encoder pulse per zero mark distance.
- Re bit 23 (de-select commutation with zero mark):
  - The bit should only be set for encoders that have not been adjusted.
- Re bit 24 (commutation with selected zero mark):
  - if bit = 1, the commutation position is corrected via a selected zero mark.
- Re bit 25 (disconnect the encoder power supply on parking):
  - if bit = 1, the encoder power supply is switched off on parking (0 V).
  - if bit = 0, the encoder power supply is not switched off on parking, it is reduced from 24 V to 5 V.
Parameters

List of parameters

Re bit 27 (extrapolate position values):
- if bit = 1, the extrapolation of the position values is activated.
Re bit 28 (cubic correction):
- if bit = 1, the cubic correction for track A/B sine is activated.
Re bit 29 (phase correction):
- if bit = 1, the phase correction for track A/B sine is activated.
Re bit 30 (amplitude correction):
- if bit = 1, the amplitude correction for track A/B sine is activated.
Re bit 31 (offset correction):
- if bit = 1, the offset correction for track A/B sine is activated.

Re bit 27 (extrapolate position values):
- if bit = 1, the extrapolation of the position values is activated.
Re bit 28 (cubic correction):
- if bit = 1, the cubic correction for track A/B sine is activated.
Re bit 29 (phase correction):
- if bit = 1, the phase correction for track A/B sine is activated.
Re bit 30 (amplitude correction):
- if bit = 1, the amplitude correction for track A/B sine is activated.
Re bit 31 (offset correction):
- if bit = 1, the offset correction for track A/B sine is activated.

---

**p0431[0...n]** Angular commutation offset / Ang_com offset

**VECTOR_G**

- **Can be changed:** C2(4)
- **Data type:** FloatingPoint32
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** -180.00 ['']
- **Max:** 180.00 ['']

**Description:**
Sets the angular commutation offset.

**Dependency:**
The value is taken into account in r0094.
Refer to: r0094, r1778

**Caution:**
When the firmware is upgraded from V2.3 to V2.4 or higher, the value must be reduced by 60° if all the following conditions are fulfilled:
- The motor is a synchronous motor (p0300 = 2, 2xx, 4, 4xx).
- The encoder is a resolver (p0404.23 = 1).
- The actual speed value is inverted (p0410.0 = 1).

**Note:**
The angular commutation offset cannot be generally taken from other drive systems. As a minimum - the sign of the offset determined for SIMODRIVE 611 digital and SIMODRIVE 611 universal must be reversed for SINAMICS (p0431 (SINAMICS) = -p1016 (SIMODRIVE)).

**For p0404.5 = 1 (track C/D) the following applies:**
The angular offset in p0431 acts on track A/B, the zero mark on track C/D.

**For p0404.6 = 1 (Hall sensor) the following applies:**
The angular offset in p0431 acts on track A/B and the zero mark.

---

**p0432[0...n]** Gearbox factor, encoder revolutions / Grbx_fact enc_rev

**ENC, VECTOR_G**

- **Can be changed:** C2(4)
- **Data type:** Integer16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** 1
- **Max:** 10000

**Description:**
Sets the encoder revolutions for the gearbox factor of the encoder evaluation.
The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

**Dependency:**
This parameter can only be set for p0402 = 9999.
Refer to: p0402, p0410, p0433

**Note:**
Negative gearbox factors should be implemented with p0410.
### p0433[0...n] Gearbox factor, motor/load revolutions / Grbx_fact mot_rev

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the motor and load revolutions for the gearbox factor of the encoder evaluation. The gearbox factor specifies the ratio between the encoder shaft and motor shaft (for motor encoders) or between the encoder shaft and the load.

**Dependency:**
This parameter can only be set for p0402 = 9999.
Refer to: p0402, p0410, p0432

**Note:**
Negative gearbox factors should be implemented with p0410.

### p0434[0...n] Encoder SSI error bit / Enc SSI error bit

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
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<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the position and level of the error bit in the SSI protocol.

**Notice:**
The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

**Note:**
Value = dcba
ba: Position of the error bit in the protocol (0 ... 63).
c: Level (0: Low level, 1: High level).
d: Status of the evaluation (0: Off, 1: On error bit, 2: On with 2 error bits ... 9: On with 9 error bits).
For several error error bits, the following applies:
- the position specified under ba and the additional bits are assigned increasing consecutively.
- the level set under c applies to all error bits.
Example:
p0434 = 1013
--> The evaluation is switched in and the error bit is at position 13 with a low level.
p0434 = 1113
--> The evaluation is switched in and the error bit is at position 13 with a high level.

### p0435[0...n] Encoder SSI alarm bit / Enc SSI alarm bit

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the position and level of the alarm bit in the SSI protocol.

**Notice:**
The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

**Note:**
Value = dcba
ba: Position of the alarm bit in protocol (0 ... 63).
c: Level (0: Low level, 1: High level).
d: State of the evaluation (0: Off, 1: On).
### Parameters

**List of parameters**

Example:
- **p0435 = 1014**
  --> The evaluation is switched in and the alarm bit is at position 14 with a low level.
- **p0435 = 1114**
  --> The evaluation is switched in and the alarm bit is at position 14 with a high level.

<table>
<thead>
<tr>
<th>p0436[0...n] Encoder SSI parity bit / Enc SSI parity bit</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
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<tr>
<td>Not for motor type: -</td>
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<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the position and parity of the parity bit in the SSI protocol.

**Notice:** The bit may only be positioned before (p0446) or after (p0448) the absolute value in the SSI protocol.

**Note:** Value = dcba
- ba: Position of the parity bit in the protocol (0 ... 63).
- c: Parity (0: even, 1: uneven).
- d: State of the evaluation (0: Off, 1: On).

Example:
- **p0436 = 1015**
  --> The evaluation is switched in and the parity bit is at position 15 with even parity.
- **p0436 = 1115**
  --> The evaluation is switched in and the parity bit is at position 15 with uneven parity.

<table>
<thead>
<tr>
<th>p0437[0...n] Sensor Module configuration extended / SM config ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the extended configuration of the Sensor Module.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
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</thead>
<tbody>
<tr>
<td>00</td>
<td>Data logger</td>
<td>Yes</td>
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<tr>
<td>01</td>
<td>Zero mark edge detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Correction position actual value XIST1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Edge evaluation bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>05</td>
<td>Edge evaluation bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Freeze the speed actual value for dn/dt errors</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>07</td>
<td>Accumulate uncorrected encoder pulses</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>11</td>
<td>Fault handling after PROFIdrive</td>
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<td>No</td>
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<tr>
<td>12</td>
<td>Activate additional messages</td>
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<td>No</td>
<td>-</td>
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<tr>
<td>13</td>
<td>Support absolute position for incremental encoder</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>25</td>
<td>Deselect monitoring multiturn representation in Gx_XIST2</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>26</td>
<td>Deselect track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>EnDat linear encoder monitoring incremental/absolute</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>EnDat encoder initialization with high accuracy</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Analog unipolar track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0430, r0459
Note:
A value of zero is displayed if an encoder is not present.
Re bit 00:
When the data logger (trace) is activated, in the case of a fault, data before and after the event are recorded (traced) and saved in files on the non-volatile memory medium. Experts can then evaluate this data.
Re bit 01:
If bit = 0, the zero mark is evaluated by ANDing tracks A and B and the zero mark.
For bit = 1, the zero mark is evaluated depending on the direction of rotation detected. For a positive direction of rotation, the positive edge of the zero mark is considered and for a negative direction of rotation, the negative edge of the zero mark.
Re bit 02:
If the bit is set, in the event of a deviation less than the tolerance window for the zero mark (p4681, p4682), the pulses per revolution are corrected. If the bit is not set, encoder fault F3x131 is triggered.
Re Bit 04 and Bit 05:
The actual hardware only supports 1x or 4x signal evaluation.
Bit 5/4 = 0/0: Signal evaluation per period, 4x.
Bit 5/4 = 1/0: Illegal setting.
Bit 5/4 = 0/1: Signal evaluation per period, 1x.
Bit 5/4 = 1/1: Illegal setting.
Re bit 06:
If the function is active, when dn/dt monitoring responds, the speed actual value is internally frozen for a time equivalent to two current controller clock cycles. The rotor position continues to be integrated. The actual value is then re-enabled after this time has expired.
Re bit 07:
If the bit is set, the encoder pulses which have not been corrected are added to p4688 at the zero mark.
Re bit 11:
If the bit is set, the Sensor Module checks within a certain time grid whether the fault cause is still present. This enables the Sensor Module to switch from the fault state to the operating state and provide valid actual values automatically. The faults are displayed until the user acknowledges them.
Re bit 12:
Additional fault messages can be activated for extended fault diagnostics.
Re bit 13:
When the bit is set, for an incremental encoder with zero mark, the absolute value in Gn_XIST2 can be requested via Gn_STW.13.
Re bit 20:
If the bit is set, the bandwidth of the analog filter for SMx10 (resolver) and SMx20 (sin/cos encoder) can be set via p4660.
Re bit 26:
Track monitoring is de-activated for the square-wave encoders when the bit is set, even if the monitoring function is selected in p0405.2.
Re bit 28:
Monitoring of the difference between incremental and absolute position in the case of linear encoders.
Re bit 29:
When the bit is set, the EnDat encoder is initialized under a certain speed and, therefore, with high accuracy. If initialization at a higher speed is requested, fault F31151, F32151, or F33151 is output.
Re bit 31:
When monitoring is active, the levels of the individual track signals and the corresponding inverted track signals are monitored separately.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>p0437[0...n]</th>
<th>Sensor Module configuration extended / SM config ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC (Lin_enc)</td>
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<td>Data type:</td>
<td>Calculated: -</td>
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<td>P-Group:</td>
<td>Access level: 3</td>
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<td>Not for motor type:</td>
<td>Dynamic index: EDS, p0140</td>
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<td>Min</td>
<td>Units group: -</td>
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<tr>
<td>Max</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td>Expert list: 1</td>
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<td>Factory setting</td>
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<tr>
<td></td>
<td>0011 0000 0000 0000 0000 0000 0000 0000 bin</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the extended configuration of the Sensor Module.</td>
</tr>
</tbody>
</table>

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<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
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<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Correction position actual value XIST1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Edge evaluation bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Edge evaluation bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Freeze the speed actual value for dndt errors</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Accumulate uncorrected encoder pulses</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Fault handling after PROFIdrive</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Activate additional messages</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Support absolute position for incremental encoder</td>
<td>Yes</td>
<td>No</td>
<td>4750</td>
</tr>
<tr>
<td>25</td>
<td>Deselect monitoring multiturn representa-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>tion in Gx_XIST2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Deselect track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>EnDat linear encoder monitoring incremen-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>tal/absolute</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>EnDat encoder initialization with high accuracy</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Analog unipolar track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p0430, r0459

**Note:**

A value of zero is displayed if an encoder is not present.

Re bit 00:

When the data logger (trace) is activated, in the case of a fault, data before and after the event are recorded (traced) and saved in files on the non-volatile memory medium. Experts can then evaluate this data.

Re bit 01:

If bit = 0, the zero mark is evaluated by ANDing tracks A and B and the zero mark.

For bit = 1, the zero mark is evaluated depending on the direction detected. For a positive direction, the positive edge of the zero mark is considered and for a negative direction, the negative edge of the zero mark.

Re bit 02:

If the bit is set, in the event of a deviation less than the tolerance window for the zero mark (p4681, p4682), the pulses per revolution are corrected. If the bit is not set, encoder fault F3x131 is triggered.

Re Bit 04 and Bit 05:

Bit 5/4 = 0/0: Signal evaluation per period, 4x.
Bit 5/4 = 1/0: Signal evaluation per period, 4x.
Bit 5/4 = 0/1: Signal evaluation per period, 1x.
Bit 5/4 = 1/1: Illegal setting.

Re bit 06:

If the function is active, when dndt monitoring responds, the velocity actual value is internally frozen for a time equivalent to two current controller clock cycles. The rotor position continues to be integrated. The actual value is then re-enabled after this time has expired.

Re bit 07:

If the bit is set, the encoder pulses detected as faulty between two zero marks are accumulated (p4688).

Re bit 29:

When the bit is set, the EnDat encoder is initialized under a certain velocity and, therefore, with high accuracy. If initialization at a higher velocity is requested, fault F31151, F32151, or F33151 is output.
Re bit 31:
When monitoring is active, the levels of the individual track signals and the corresponding inverted track signals are monitored separately.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Range</th>
<th>Default</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0438[0...n]</td>
<td>Squarewave encoder filter time / Enc t_filt</td>
<td>ENC, VECTOR_G</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00 [µs]</td>
<td>100.00 [µs]</td>
<td>0.64 [µs]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the filter time for a squarewave encoder. The hardware of the squarewave encoder only supports the following values:
- 0: No filtering
- 0.04 µs
- 0.64 µs
- 2.56 µs
- 10.24 µs
- 20.48 µs

Dependency: Refer to: r0452
Notice: If the filter time is too long, the track signals A/B/R may be suppressed and the appropriate messages output.
Note: The most suitable filter time depends on the number of pulses and maximum speed of the square-wave encoder. The filter time is automatically corrected to the next value when entering a non-specified value. In this case, no message is output. The effective filter time is displayed in r0452.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Range</th>
<th>Default</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0439[0...n]</td>
<td>Encoder ramp-up time / Enc ramp-up time</td>
<td>ENC, VECTOR_G</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 [ms]</td>
<td>65535 [ms]</td>
<td>0 [ms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the ramp-up time for the encoder. The encoder supplies stable track signals once this time has elapsed.
Caution: This parameter is automatically pre-set for encoders from the encoder list (p0400).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Range</th>
<th>Default</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0440[0...n]</td>
<td>Copy encoder serial number / Copy enc ser_no</td>
<td>ENC, VECTOR_G</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Copies the actual serial number of the encoder belonging to this Encoder Data Set (EDS) to p0441 ... p0445. Example:
For p0440[0] = 1, the serial number of the encoder belonging EDS0 is copied to p0441[0] ... p0445[0].

Value: 0: No action
1: Transfer serial number

Dependency: Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464, p1990
Note: For encoders with serial number, encoder replacement is monitored in order to request angular commutation calibration (adjustment) for motor encoders and absolute calibration for direct measuring systems with absolute value data. The serial number, which from then onwards is used for monitoring purposes, can be transferred using p0440.
In the following cases, copying is automatically started in the following cases:
1.) When commissioning 1FT6, 1FK6, 1FK7 motors.
2.) When writing into p0431.
3.) For p1990 = 1.
p0440 is automatically set to 0 when the copying has been completed.
In order to permanently accept the copied values, it is necessary to save in a non-volatile fashion (p0977).

### p0441[0...n]
**Encoder commissioning serial number part 1 / Enc comm ser_no 1**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number part 1 of the encoder for the commissioning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: p0440, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A value of zero is displayed if an encoder is not present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p0441**
**ENC, VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_ALL</td>
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<tr>
<td>Access level:</td>
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</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>EDS, p0140</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
</tr>
<tr>
<td>0000 hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:** Serial number part 1 of the encoder for the commissioning.
**Dependency:** Refer to: p0440, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464
**Note:** A value of zero is displayed if an encoder is not present.

### p0442[0...n]
**Encoder commissioning serial number part 2 / Enc comm ser_no 2**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number part 2 of the encoder for the commissioning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: p0440, p0441, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A value of zero is displayed if an encoder is not present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p0442**
**ENC, VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_ALL</td>
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<tr>
<td>Access level:</td>
<td>4</td>
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<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>EDS, p0140</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
</tr>
<tr>
<td>0000 hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:** Serial number part 2 of the encoder for the commissioning.
**Dependency:** Refer to: p0440, p0441, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464
**Note:** A value of zero is displayed if an encoder is not present.

### p0443[0...n]
**Encoder commissioning serial number part 3 / Enc comm ser_no 3**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number part 3 of the encoder for the commissioning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: p0440, p0441, p0442, p0444, p0445, r0460, r0461, r0462, r0463, r0464</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A value of zero is displayed if an encoder is not present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p0443**
**ENC, VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_ALL</td>
</tr>
<tr>
<td>Access level:</td>
<td>4</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>EDS, p0140</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
</tr>
<tr>
<td>0000 hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:** Serial number part 3 of the encoder for the commissioning.
**Dependency:** Refer to: p0440, p0441, p0442, p0444, p0445, r0460, r0461, r0462, r0463, r0464
**Note:** A value of zero is displayed if an encoder is not present.

### p0444[0...n]
**Encoder commissioning serial number part 4 / Enc comm ser_no 4**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial number part 4 of the encoder for the commissioning.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Dependency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Refer to: p0440, p0441, p0442, p0443, p0445, r0460, r0461, r0462, r0463, r0464</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A value of zero is displayed if an encoder is not present.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**List of parameters**

### p0445[0...n] Encoder commissioning serial number part 5 / Enc comm ser_no 5

**ENC, VECTOR_G**

- Can be changed: C2(4)
- Calculated: CALC_MOD_ALL
- Access level: 4
- Data type: Unsigned32
- Dynamic index: EDS, p0140
- Func. diagram: -
- P-Group: Encoder
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: 0000 hex
- Max: FFFF hex
- Factory setting: 0000 hex

**Description:** Serial number part 5 of the encoder for the commissioning.

**Dependency:** Refer to: p0440, p0441, p0442, p0443, p0444, r0460, r0461, r0462, r0463, r0464

**Note:** A value of zero is displayed if an encoder is not present.

### p0446[0...n] Encoder SSI number of bits before the absolute value / Enc SSI bit before

**ENC, VECTOR_G**

- Can be changed: C2(4)
- Calculated: -
- Access level: 3
- Data type: Unsigned16
- Dynamic index: EDS, p0140
- Func. diagram: -
- P-Group: Encoder
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: 0
- Max: 65535
- Factory setting: 0

**Description:** Sets the number of bits before the absolute value in the SSI protocol.

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

**Note:** For example, error bit, alarm bit or parity bit can be positioned at these bits.

### p0447[0...n] Encoder SSI number of bits absolute value / Enc SSI bit val

**ENC, VECTOR_G**

- Can be changed: C2(4)
- Calculated: -
- Access level: 3
- Data type: Unsigned16
- Dynamic index: EDS, p0140
- Func. diagram: -
- P-Group: Encoder
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: 0
- Max: 65535
- Factory setting: 25

**Description:** Sets the number of bits for the absolute value in the SSI protocol.

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

### p0448[0...n] Encoder SSI number of bits after the absolute value / Enc SSI bit after

**ENC, VECTOR_G**

- Can be changed: C2(4)
- Calculated: -
- Access level: 3
- Data type: Unsigned16
- Dynamic index: EDS, p0140
- Func. diagram: -
- P-Group: Encoder
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: 0
- Max: 65535
- Factory setting: 0

**Description:** Sets the number of bits after the absolute value in the SSI protocol.

**Caution:** This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.

**Note:** For example, error bit, alarm bit or parity bit can be positioned at these bits.
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Caution</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0449[0...n]</td>
<td>Encoder SSI number of bits, filler bits / Enc SSI fill bits</td>
<td>Can be changed: C2(4)</td>
<td>Sets the number of filler bits for double absolute value transfer in the SSI protocol.</td>
<td>This parameter is only of significance for p0429.2 = 1.</td>
</tr>
<tr>
<td>ENC, VECTOR_G</td>
<td>Calculated: -</td>
<td></td>
<td>Refer to: p0429</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: EDS, p0140</td>
<td></td>
<td>This parameter is automatically pre-set for encoders from the encoder list (p0400). When selecting a catalog encoder, this parameter cannot be changed (write protection). Information in p0400 should be carefully observed when removing write protection.</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r0451[0...2] | Commutation angle factor / Enc commut_factor | Can be changed: - | Displays the relationship between the electrical and mechanical pole positions. | A value of zero is displayed if an encoder is not present. |
| VECTOR_G | Calculated: - |             |                                                                     |                                                                     |
| Data type: Unsigned16 | Dynamic index: - |             | Access level: 3                                                      |                                                                     |
| P-Group: Encoder | Units group: - |             |                                                                     |                                                                     |
| Not for motor type: - | Scaling: - |             |                                                                     |                                                                     |

| r0452 | Squarewave encoder filter time display / Enc t_filt displ | Can be changed: - | Displays the effective filter time for a squarewave encoder. | A value of zero is displayed if an encoder is not present. |
| ENC | Calculated: - |             | The filter time is set using p0438. |                                                                     |
| Data type: FloatingPoint32 | Dynamic index: - |             |                                                                     |                                                                     |
| P-Group: Encoder | Units group: - |             |                                                                     |                                                                     |
| Not for motor type: - | Scaling: - |             |                                                                     |                                                                     |
| Min | Max | Factory setting |                                                                     |                                                                     |
| - [µs] | - [µs] | - [µs] |                                                                     |                                                                     |

| r0452[0...2] | Squarewave encoder filter time display / Enc t_filt displ | Can be changed: - | Displays the effective filter time for a squarewave encoder. | A value of zero is displayed if an encoder is not present. |
| VECTOR_G | Calculated: - |             | The filter time is set using p0438. |                                                                     |
| Data type: FloatingPoint32 | Dynamic index: - |             |                                                                     |                                                                     |
| P-Group: Encoder | Units group: - |             |                                                                     |                                                                     |
| Not for motor type: - | Scaling: - |             |                                                                     |                                                                     |
| Min | Max | Factory setting |                                                                     |                                                                     |
| - [µs] | - [µs] | - [µs] |                                                                     |                                                                     |

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Note: A value of zero is displayed if an encoder is not present.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0453[0...n]</td>
<td>Pulse encoder evaluation zero speed measuring time / Enc_ev z 0 t_meas</td>
<td></td>
<td>This function is required for slow-running motors so that actual speeds close to zero can be output correctly.</td>
</tr>
<tr>
<td>ENC, VECTOR_G</td>
<td>Sets the measuring time for evaluating zero speed. If no pulses are detected from track A/B during this time, a speed actual value of zero is output.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: EDS, p0140</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.10 [ms]</td>
<td>10000.00 [ms]</td>
<td>1000.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the detected encoder configuration.

In this case, the encoder must automatically support the function (e.g. encoder with EnDat interface).

Bit field: Bit Signal name 1 signal 0 signal FP
00 Linear encoder Yes No -
01 Absolute encoder Yes No -
02 Multiturn encoder Yes No -
03 Track A/B sq-wave Yes No -
04 Track A/B sine Yes No -
05 Track C/D Yes No -
06 Hall sensor Yes No -
08 EnDat encoder Yes No -
09 SSI encoder Yes No -
10 DRIVE-CLiQ encoder Yes No -
11 Digital encoder Yes No -
12 Equidistant zero mark Yes No -
13 Irregular zero mark Yes No -
14 Distance-coded zero mark Yes No -
15 Commutation with zero mark (not ASM) Yes No -
16 Acceleration Yes No -
17 Track A/B analog Yes No -
20 Voltage level 5 V Yes No -
21 Voltage level 24 V Yes No -
22 Remote sense (only SMC30) Yes No -
23 Resolver excit. Yes No -

Dependency: Refer to: p0404

Note: ZM: Zero mark

This parameter is only used for diagnostics.

A value of zero is displayed if an encoder is not present.

Re bit 20, 21 (voltage level 5 V, voltage level 24 V):

The voltage level cannot be detected. Therefore, these bits are always set to 0.
**Parameters**

**List of parameters**

---

**Encoder configuration recognized / Enc config act**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Linear encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Absolute encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Multiturn encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Track A/B sq-wave</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Track A/B sine</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Track C/D</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Hall sensor</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>EnDat encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>SSI encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>DRIVE-CLiQ encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Digital encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Equidistant zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Irregular zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Distance-coded zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Commutation with zero mark (not ASM)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Acceleration</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Track A/B analog</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Voltage level 5 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Voltage level 24 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Remote sense (only SMC30)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Resolver excit.</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0404

**Note:**
- ZM: Zero mark
- This parameter is only used for diagnostics.
- A value of zero is displayed if an encoder is not present.
- Re bit 20, 21 (voltage level 5 V, voltage level 24 V):
  - The voltage level cannot be detected. Therefore, these bits are always set to 0.

---

**Encoder configuration supported / Enc_config supp**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Linear encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Absolute encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Multiturn encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Track A/B sq-wave</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Track A/B sine</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Displays the encoder configuration supported by the Sensor Module.
### List of parameters

#### Dependency:
Refer to: p0404

#### Note:
ZM: Zero mark

This parameter is only used for diagnostics.
A value of zero is displayed if an encoder is not present.

#### r0456[0...2] Encoder configuration supported / Enc_config supp

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Linear encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Absolute encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Multiturn encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>Track A/B sq-wave</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>04</td>
<td>Track A/B sine</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Track C/D</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>06</td>
<td>Hall sensor</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>08</td>
<td>EnDat encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>09</td>
<td>SSI encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>DRIVE-CLiQ encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Digital encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Equidistant zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Irregular zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Distance-coded zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Commutation with zero mark (not ASM)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>Acceleration</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>Track A/B analog</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>Voltage level 5 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>21</td>
<td>Voltage level 24 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>22</td>
<td>Remote sense (only SMC30)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td>Resolver excit.</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Description:
Displays the encoder configuration supported by the Sensor Module.

#### Index:
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3
r0458  Sensor Module properties / SM properties

ENC  Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: 4704
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
-  -
Description: Sets the Sensor Module configuration.

Dependency: Refer to: p0437, p0600, p0601
Note: A value of zero is displayed if an encoder is not present.
Re bit 11:
When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"); p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445
Re bit 12:
The extended functions can be configured using p0437.
Re bit 13:
Encoder faults can be acknowledged via Gn_STW.15.
Re bit 14:
Only for internal Siemens use.
Re bit 23:
When the property is set, commutation with zero mark can be de-selected using p0430.23.
Re bit 24:
If the property is set, commutation to the selected zero mark can be carried out.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Encoder data available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Motor data available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Temperature sensor connection available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>Connection for PTC for motor with DRIVE-CLiQ also available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>04</td>
<td>Module temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Absolute encoder p0408/p0421, no power of 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>06</td>
<td>Sensor Module permits parking/unparking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>07</td>
<td>Hall sensor can be combined with actual value inversion</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>08</td>
<td>Evaluation through several temperature channels possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>09</td>
<td>Encoder fault and its associated information available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Velocity diagnostics in the Sensor Module</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Configuring without park state possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Extended functions available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Extended encoder fault handling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Extended singleturn/multiturn information available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Valuation figures available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>16</td>
<td>16</td>
<td>Pole position identification</td>
<td>Yes</td>
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<tr>
<td>17</td>
<td>17</td>
<td>Burst oversampling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>Continuous oversampling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>19</td>
<td>19</td>
<td>Safety position actual value sensing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>Extended velocity calculation available (only SMC30)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>21</td>
<td>Zero mark tolerance</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>22</td>
<td>Rot pos adapt</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>23</td>
<td>Commutation with zero mark can be de-selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>24</td>
<td>Commutation with selected zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>25</td>
<td>Disconnection of encoder power supply on parking supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>26</td>
<td>Parking with temperature evaluation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>27</td>
<td>SSI position value extrapolation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>28</td>
<td>Cubic correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>29</td>
<td>Phase correction</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>30</td>
<td>30</td>
<td>Amplitude correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>31</td>
<td>Offset correction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Dependency:
Refer to: p0437, p0600, p0601

Note:
A value of zero is displayed if an encoder is not present.
Re bit 11:
When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):
p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445
Re bit 12:
The extended functions can be configured using p0437.
Re bit 13:
Encoder faults can be acknowledged via Gn_STW.15.
Re bit 14:
Only for internal Siemens use.
Re bit 23:
When the property is set, commutation with zero mark can be de-selected using p0430.23.
Re bit 24:
If the property is set, commutation to the selected zero mark can be carried out.

r0458[0...2] Sensor Module properties / SM properties
VECTOR_G
Can be changed: -
Calculated: -
Access level: 3

Data type: Unsigned32
Dynamic index: -
Func. diagram: 4704

P-Group: Encoder
Units group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Index:

[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Description:
Sets the Sensor Module configuration.

Index:

[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Bit field: Bit Signal name 1 signal 0 signal FP
00 Encoder data available Yes No -
01 Motor data available Yes No -
02 Temperature sensor connection available Yes No -
03 Connection for PTC for motor with DRIVE-CLIQ also available Yes No -
04 Module temperature available Yes No -
05 Absolute encoder p0408/p0421, no power of 2 Yes No -
06 Sensor Module permits parking/unparking Yes No -
07 Hall sensor can be combined with actual value inversion Yes No -
08 Evaluation through several temperature channels possible Yes No -
09 Encoder fault and its associated information available Yes No -
10 Speed diagnostics in the Sensor Module Yes No -
11 Configuring without park state possible Yes No -
12 Extended functions available Yes No -
13 Extended encoder fault handling Yes No -
14 Extended singleturn/multiturn information available Yes No -
15 Valuation figures available Yes No -
16 Pole position identification Yes No -
17 Burst oversampling Yes No -
18 Continuous oversampling Yes No -
19 Safety position actual value sensing Yes No -
20 Extended speed calculation being used Yes No -
(only SMC30)
21 Zero mark tolerance Yes No -
### List of parameters

#### Dependency:
Refer to: p0437, p0600, p0601

#### Note:
A value of zero is displayed if an encoder is not present.

Re bit 11:
When the property is set, the following parameters can be changed without the actual value in the encoder interface becoming invalid (state r0481.14 = 1 "parking encoder active"):
p0314, p0315, p0430, p0431, p0441, p0442, p0443, p0444, p0445

Re bit 12:
The extended functions can be configured using p0437.

Re bit 13:
Encoder faults can be acknowledged via Gn_STW.15.

Re bit 14:
Only for internal Siemens use.

Re bit 23:
When the property is set, commutation with zero mark can be de-selected using p0430.23.

Re bit 24:
If the property is set, commutation to the selected zero mark can be carried out.

---

#### r0459 Sensor Module properties extended / SM prop ext

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Data logger</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Zero mark edge detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
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<tr>
<td>02</td>
<td>Correction position actual value XIST1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>04</td>
<td>Edge evaluation bit 0</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>06</td>
<td>Freeze the speed actual value for dn/dt errors</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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</tr>
<tr>
<td>07</td>
<td>Accumulate uncorrected encoder pulses</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Function p0426, p0439 supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Pulse/direction interface</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fault handling after PROFIdrive</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Activate additional messages</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Absolute position for incremental encoder supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Spindle functionality</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Additional temperature sensor available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Internal encoder temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Deselect monitoring multiturn representation in Gx_XIST2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Track monitoring de-selection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>EnDat linear encoder monitoring incremental/absolute</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
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<tr>
<td>29</td>
<td>EnDat encoder initialization with high accuracy</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Analog unipolar track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0437

**Note:** A value of zero is displayed if an encoder is not present.

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

---

#### r0459 Sensor Module properties extended / SM prop ext

<table>
<thead>
<tr>
<th>ENC (Lin_enc)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
</tbody>
</table>

**Description:** Displays the extended properties supported by the Sensor Module.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Data logger</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Zero mark edge detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Correction position actual value XIST1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Edge evaluation bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Edge evaluation bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Freeze actual velocity for dn/dt errors</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Accumulate uncorrected encoder pulses</td>
<td>Yes</td>
<td>No</td>
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<td>09</td>
<td>Function p0426, p0439 supported</td>
<td>Yes</td>
<td>No</td>
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</tr>
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<td>10</td>
<td>Pulse/direction interface</td>
<td>Yes</td>
<td>No</td>
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<td>Activate additional messages</td>
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<td>Absolute position for incremental encoder supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
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<tr>
<td>14</td>
<td>Spindle functionality</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
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<td>15</td>
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<td>16</td>
<td>Internal encoder temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Deselect monitoring multiturn representation in Gx_XIST2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Track monitoring de-selection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
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<td>28</td>
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<td>No</td>
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<td>31</td>
<td>Analog unipolar track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0437

**Note:** A value of zero is displayed if an encoder is not present.

Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.
### r0459[0...2]

**Sensor Module properties extended / SM prop ext**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Data logger</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Zero mark edge detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Correction position actual value XIST1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>Edge evaluation bit 0</td>
<td>Yes</td>
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<td>05</td>
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<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td></td>
<td>06</td>
<td>Freeze the speed actual value for dn/dt errors</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>07</td>
<td>Accumulate uncorrected encoder pulses</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
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<td>09</td>
<td>Function p0426, p0439 supported</td>
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<td>No</td>
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<td>10</td>
<td>Pulse/direction interface</td>
<td>Yes</td>
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<td>Yes</td>
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<td>Absolute position for incremental encoder supported</td>
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<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Spindle functionality</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Additional temperature sensor available</td>
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<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Internal encoder temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>Deselect monitoring multiturn representation in Gx_XIST2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>26</td>
<td>Track monitoring de-selection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>28</td>
<td>EnDat linear encoder monitoring incremental/absolute</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>EnDat encoder initialization with high accuracy</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>Analog unipolar track monitoring</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0437

**Note:**
- A value of zero is displayed if an encoder is not present.
- Re bit 09:
  - Parameter p0426 or p0439 has been modified. These functions are not supported by the connected Sensor Module.

### r0460

**Encoder serial number part 1 / Enc ser_no 1**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ENC</td>
<td>Can be changed:</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ENC</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td></td>
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<td>ENC</td>
<td>Access level:</td>
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<td></td>
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<td>ENC</td>
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</tr>
<tr>
<td></td>
<td>ENC</td>
<td>Dynamic index:</td>
<td>-</td>
<td>-</td>
<td></td>
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<tr>
<td></td>
<td>ENC</td>
<td>Func. diagram:</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>ENC</td>
<td>P-Group:</td>
<td>Encoder</td>
<td>-</td>
<td></td>
</tr>
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<td></td>
<td>ENC</td>
<td>Units group:</td>
<td>-</td>
<td>-</td>
<td></td>
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<td></td>
<td>ENC</td>
<td>Unit selection:</td>
<td>-</td>
<td>-</td>
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<td></td>
<td>ENC</td>
<td>Not for motor type:</td>
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<td>-</td>
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<td>ENC</td>
<td>Scaling:</td>
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<td>ENC</td>
<td>Expert list:</td>
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<td>ENC</td>
<td>Min</td>
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<td>Max</td>
<td></td>
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<tr>
<td></td>
<td>ENC</td>
<td>Factory setting</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
- Displays the actual serial number part 1 of the appropriate encoder.

**Dependency:**
- Refer to: p0441, p0442, p0443, p0444, p0445, r0461, r0462, r0463, r0464
### Encoder serial number part 1 / Enc ser_no 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0460[0...2]</td>
<td>Displays the actual serial number part 1 of the appropriate encoder.</td>
<td>[0] = Encoder 1, [1] = Encoder 2, [2] = Encoder 3</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0461, r0462, r0463, r0464</td>
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</table>

### Encoder serial number part 2 / Enc ser_no 2

<table>
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<th>Description</th>
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<th>Dependency</th>
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<td>r0461</td>
<td>Displays the actual serial number part 2 of the appropriate encoder.</td>
<td>[0] = Encoder 1, [1] = Encoder 2, [2] = Encoder 3</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0462, r0463, r0464</td>
</tr>
</tbody>
</table>

### Encoder serial number part 3 / Enc ser_no 3

<table>
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<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
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</thead>
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<td>r0462</td>
<td>Displays the actual serial number part 3 of the appropriate encoder.</td>
<td></td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Index</td>
<td>Dependency</td>
</tr>
<tr>
<td>--------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>r0462[0...2]</td>
<td>Encoder serial number part 3 / Enc ser_no 3</td>
<td></td>
<td>Displays the actual serial number part 3 of the appropriate encoder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464</td>
</tr>
<tr>
<td>r0463</td>
<td>Encoder serial number part 4 / Enc ser_no 4</td>
<td></td>
<td>Displays the actual serial number part 4 of the appropriate encoder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0464</td>
</tr>
<tr>
<td>r0463[0...2]</td>
<td>Encoder serial number part 4 / Enc ser_no 4</td>
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</tr>
<tr>
<td>r0464</td>
<td>Encoder serial number part 5 / Enc ser_no 5</td>
<td></td>
<td>Displays the actual serial number part 5 of the appropriate encoder.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463</td>
</tr>
</tbody>
</table>

**VECTOR_G**

**ENC**

**Can be changed:** -

**Data type:** Unsigned32

**P-Group:** Encoder

**Not for motor type:** -

**Min**

**Max**

**Access level:** 3

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Factory setting**

**Description:** Displays the actual serial number part 3 of the appropriate encoder.

**Index:**

[0] = Encoder 1

[1] = Encoder 2

[2] = Encoder 3

**Dependency:**

Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464

**ENC**

**Can be changed:** -

**Data type:** Unsigned32

**P-Group:** Encoder

**Not for motor type:** -

**Min**

**Max**

**Access level:** 3

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Factory setting**

**Description:** Displays the actual serial number part 4 of the appropriate encoder.

**Index:**

[0] = Encoder 1

[1] = Encoder 2

[2] = Encoder 3

**Dependency:**

Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0464

**ENC**

**Can be changed:** -

**Data type:** Unsigned32

**P-Group:** Encoder

**Not for motor type:** -

**Min**

**Max**

**Access level:** 3

**Dynamic index:** -

**Units group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Factory setting**

**Description:** Displays the actual serial number part 5 of the appropriate encoder.

**Dependency:**

Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0464[0...2]</td>
<td>Encoder serial number part 5 / Enc ser_no 5</td>
<td>Displays the actual serial number part 5 of the appropriate encoder.</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463</td>
<td>An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.</td>
</tr>
<tr>
<td>r0465[0...27]</td>
<td>Encoder 1 identification number/serial number / Enc1 ID_no/Ser_no</td>
<td>Displays the identification/serial number of encoder 1.</td>
<td>Refer to: r0460, r0461, r0462, r0463, r0464</td>
<td>The individual characters of the identification number/serial number are available coded as ASCII characters.</td>
</tr>
<tr>
<td>r0466[0...27]</td>
<td>Encoder 2 identification number/serial number / Enc2 ID_no/Ser_no</td>
<td>Displays the identification/serial number of encoder 2.</td>
<td>Refer to: r0460, r0461, r0462, r0463, r0464</td>
<td>An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.</td>
</tr>
</tbody>
</table>

**Parameter r0464[0...2]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Index</th>
<th>Access level</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0464[0...2]</td>
<td>Encoder serial number part 5 / Enc ser_no 5</td>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
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<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
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**Parameter r0465[0...27]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Index</th>
<th>Access level</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0465[0...27]</td>
<td>Encoder 1 identification number/serial number / Enc1 ID_no/Ser_no</td>
<td>ENC, VECTOR_G</td>
<td>Can be changed: -</td>
<td>-</td>
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<tr>
<td></td>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
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<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>-</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</table>

**Parameter r0466[0...27]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Index</th>
<th>Access level</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0466[0...27]</td>
<td>Encoder 2 identification number/serial number / Enc2 ID_no/Ser_no</td>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
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<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td>Parameter</td>
<td>Description</td>
<td>Dependency</td>
<td>Notice</td>
<td>Note</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>------------</td>
<td>--------</td>
<td>------</td>
</tr>
<tr>
<td>r0467[0...27]</td>
<td>Encoder 3 identification number/serial number / Enc3 ID_no/Ser_no</td>
<td>Displays the identification/serial number of encoder 3. Index 0 = first character of the identification number ... Index x = 20 hex (blank) --&gt; separation between the identification number of serial number Index x + 1 = 2F hex (slash) --&gt; separation between the identification number of serial number Index x + 2 = 20 hex (blank) --&gt; separation between the identification number of serial number Index x + 3 = first character of the serial number ... Index y with contents = last character of the serial number</td>
<td>Refer to: r0460, r0461, r0462, r0463, r0464</td>
<td>An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual. The individual characters of the identification number/serial number are available coded as ASCII characters.</td>
</tr>
<tr>
<td>r0469</td>
<td>Absolute encoder linear measuring step / Enc lin meas step</td>
<td>Displays the resolution of the absolute position for a linear absolute encoder.</td>
<td>Refer to: p0422, p9514</td>
<td></td>
</tr>
<tr>
<td>r0469[0...2]</td>
<td>Absolute encoder linear measuring step / Enc lin meas step</td>
<td>Displays the resolution of the absolute position for a linear absolute encoder.</td>
<td>Refer to: p0422, p9514</td>
<td></td>
</tr>
<tr>
<td>r0470</td>
<td>Redundant coarse value valid bits / Valid bits</td>
<td>Displays the valid bits of the redundant coarse position value.</td>
<td>Refer to: p9323, p9523</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r0470[0...2]
**Redundant coarse value valid bits / Valid bits**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the valid bits of the redundant coarse position value.</td>
<td></td>
<td>Refer to: p9323, p9523</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td>Unsigned16</td>
<td>3</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r0471
**Redundant coarse value fine resolution bits / Fine bit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>Displays the number of valid bits for the fine resolution of the redundant coarse position value.</td>
<td></td>
<td>Refer to: p9324, p9524</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td>Integer16</td>
<td>3</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r0471[0...2]
**Redundant coarse value fine resolution bits / Fine bit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the number of valid bits for the fine resolution of the redundant coarse position value.</td>
<td></td>
<td>Refer to: p9324, p9524</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td>Integer16</td>
<td>3</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r0472
**Redundant coarse position value relevant bits / Relevant bits**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>Displays the number of relevant bits for the redundant coarse position value.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td></td>
<td>Unsigned16</td>
<td>3</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**List of parameters**

**r0472[0...2]**  
**Redundant coarse position value relevant bits / Relevant bits**  
VECTOR_G  
Can be changed: -  
Calculated: -  
Access level: 3  
Data type: Unsigned16  
Dynamic index: -  
Func. diagram: -  
P-Group: Encoder  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting -  

**Description:** Displays the number of relevant bits for the redundant coarse position value.  
**Index:**  
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3  

**r0473**  
**Non safety-relevant measuring steps position value pos1 / nsrPos1**  
ENC  
Can be changed: -  
Calculated: -  
Access level: 3  
Data type: Unsigned32  
Dynamic index: -  
Func. diagram: -  
P-Group: Encoder  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting -  

**Description:** Displays the non safety-relevant measuring steps of POS1.  
**Dependency:** Refer to: p0416, p9513  

**r0473[0...2]**  
**Non safety-relevant measuring steps position value pos1 / nsrPos1**  
VECTOR_G  
Can be changed: -  
Calculated: -  
Access level: 3  
Data type: Unsigned32  
Dynamic index: -  
Func. diagram: -  
P-Group: Encoder  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting -  

**Description:** Displays the non safety-relevant measuring steps of POS1.  
**Index:**  
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3  
**Dependency:** Refer to: p0416, p9513  

**r0474**  
**Redundant coarse position value configuration / Red pos config**  
ENC  
Can be changed: -  
Calculated: -  
Access level: 3  
Data type: Unsigned32  
Dynamic index: -  
Func. diagram: -  
P-Group: Encoder  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting -  

**Description:** Displays the encoder configuration for the redundant coarse position value.  
**Bit field:** Bit Signal name 1 signal 0 signal FP  
00 Incrementer Yes No -  
01 Encoder CRC least significant byte first Yes No -  
02 Redundant coarse position val. most signifi-  
cant bit left-aligned Yes No -  
04 Binary comparison not possible Yes No -  

**Dependency:** Refer to: p9315, p9515  

---

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List of parameters

**r0474[0...2]**  Redundant coarse position value configuration / Red pos config

<table>
<thead>
<tr>
<th>VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Displays the encoder configuration for the redundant coarse position value.

**Index:**

- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Incrementer</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Encoder CRC least significant byte first</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Redundant coarse position val. most signifi-cant bit left-aligned</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Binary comparison not possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p3915, p9515

**r0475**  Gx_XIST1 coarse position safe most significant bit / Gx_XIST1 safe MSB

<table>
<thead>
<tr>
<th>ENC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Displays the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

**Note:** MSB: Most Significant Bit

**r0475[0...2]**  Gx_XIST1 coarse position safe most significant bit / Gx_XIST1 safe MSB

**VECTOR_G**

| Can be changed: - | Calculated: - | Access level: 3 |
| Data type: Unsigned16 | Dynamic index: - | Func. diagram: - |
| P-Group: Encoder | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:** Displays the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.

**Index:**

- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Note:** MSB: Most Significant Bit

**r0477**  CO: Measuring gear, position difference / Meas gear pos diff

<table>
<thead>
<tr>
<th>ENC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Integer32</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Displays the position difference before the measuring gear between powering down and powering up.

**Dependency:** Refer to: F31501, F32501, F33501

**Note:** The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.
Description:
Displays the position difference before the measuring gear between powering down and powering up.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency:
Refer to: F31501, F32501, F33501

Note:
The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.

Description:
Displays the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.
In contrast to r0482, the value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

Caution:
Following ramping-up or after a data set changeover, the new value is present at connector inputs which are interconnected to connector output r0479 and under certain circumstances take 100 ms to become available.

Reason:
These interconnections are updated in the background, unlike interconnections involving other connector outputs (e.g. CO: r0482).
The value is immediately available when non-cyclically reading r0479 (e.g. via the expert list).
### p0480

**Ci: Encoder control word Gn_STW signal source / Enc Gn_STW S_src**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1580, 4720, 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the encoder control word Gn_STW according to PROFIdrive.

**Note:**
When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

---

### p0480[0...2]

**Ci: Encoder control word Gn_STW signal source / Enc Gn_STW S_src**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1580, 4720, 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the encoder control word Gn_STW according to PROFIdrive.

**Index:**
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3

**Note:**
When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:

---

### r0481

**Co: Encoder status word Gn_ZSW / Enc Gn_ZSW**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 4704, 4730, 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the encoder status word Gn_ZSW according to PROFIdrive.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Function 1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Function 2 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Function 3 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Function 4 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Value 1</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Value 2</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Value 3</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Value 4</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Measuring probe 1 deflected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Measuring probe 2 deflected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Encoder fault acknowledge active</td>
<td>Yes</td>
<td>No</td>
<td>9676</td>
</tr>
<tr>
<td>13</td>
<td>Absolute value cyclically</td>
<td>Displayed in r0483</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Parking encoder active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Encoder fault</td>
<td>Displayed in r0483</td>
<td>None</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**
Information on Gn_STW/Gn_ZSW can, e.g. be found in the following literature:
SINAMICS S120 Function Manual Drive Functions
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Function 1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
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<td>01</td>
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<td>Yes</td>
<td>No</td>
<td>-</td>
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<td>02</td>
<td>Function 3 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Function 4 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Value 1</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
<td></td>
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<tr>
<td>05</td>
<td>Value 2</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
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<td>06</td>
<td>Value 3</td>
<td>Displayed in r0483</td>
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<td>-</td>
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<tr>
<td>07</td>
<td>Value 4</td>
<td>Displayed in r0483</td>
<td>Not present</td>
<td>-</td>
<td></td>
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<tr>
<td>08</td>
<td>Measuring probe 1 deflected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Measuring probe 2 deflected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Encoder fault acknowledge active</td>
<td>Yes</td>
<td>No</td>
<td>9676</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Absolute value cyclically</td>
<td>Displayed in r0483</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Parking encoder active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Encoder fault</td>
<td>Displayed in r0483</td>
<td>None</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### Note:

Re bit 14:
Displays the acknowledgement for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.

Re bit 14, 15:
r0481.14 = 1 and r0481.15 = 0 can have one of the following causes:
- the encoder is parked.
- the encoder is de-activated.
- the encoder is being commissioned.
- no parameterized encoder available.
- encoder data set is being changed over.

r0481.14 = 1 and r0481.15 = 1 has the following significance:
An encoder error has occurred and the encoder position actual value (Gn_XIST1) is invalid.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0482 CO: Encoder actual position value Gn_XIST1 / Enc Gn_XIST1</td>
<td></td>
</tr>
<tr>
<td>ENC Can be changed: - Calculated: - Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: 4704, 4735, 4740, 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min - Max Factory setting -</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the encoder actual position value Gn_XIST1 according to PROFIdrive. Note: - this value is reset if necessary when the &quot;parking encoder&quot; (r0481.14) function is de-selected. - in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1). - The update time for the position control (EPOS) corresponds to the position controller clock cycle p0115[4]. - The update time in isochronous operation corresponds to the bus cycle time r2064[1]. - The update time in isochronous operation and with position control (EPOS) corresponds to the position controller clock cycle p0115[4]. - The update time in non-isochronous operation or without position control (EPOS) comprises the following: Update time = 4 * least common multiple (LCM) of all current controller clock cycles (p0115[0]) in the drive group (infeed + drives). The minimum update time is 1 ms. Example 1: infeed, servo Update time = 4 * LCM(250 µs, 125 µs) = 4 * 250 µs = 1 ms Example 2: infeed, servo, vector Update time = 4 * LCM(250 µs, 125 µs, 500 µs) = 4 * 500 µs = 2 ms</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0482[0...2] CO: Encoder actual position value Gn_XIST1 / Enc Gn_XIST1</td>
<td></td>
</tr>
<tr>
<td>VECTOR_G Can be changed: - Calculated: - Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: 1580, 1680, 4704, 4735, 4740, 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min - Max Factory setting -</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the encoder actual position value Gn_XIST1 according to PROFIdrive. Index: [0] = Encoder 1 [1] = Encoder 2 [2] = Encoder 3 Note: - this value is reset if necessary when the &quot;parking encoder&quot; (r0481.14) function is de-selected. - in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1). - The update time for the position control (EPOS) corresponds to the position controller clock cycle p0115[4]. - The update time in isochronous operation corresponds to the bus cycle time r2064[1]. - The update time in isochronous operation and with position control (EPOS) corresponds to the position controller clock cycle p0115[4]. - The update time in non-isochronous operation or without position control (EPOS) comprises the following: Update time = 4 * least common multiple (LCM) of all current controller clock cycles (p0115[0]) in the drive group (infeed + drives). The minimum update time is 1 ms. Example 1: infeed, servo Update time = 4 * LCM(250 µs, 125 µs) = 4 * 250 µs = 1 ms Example 2: infeed, servo, vector Update time = 4 * LCM(250 µs, 125 µs, 500 µs) = 4 * 500 µs = 2 ms</td>
<td></td>
</tr>
</tbody>
</table>
**r0483**

CO: Encoder actual position value Gn_XIST2 / Enc Gn_XIST2

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 4704, 4750

**P-Group:** Encoder  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

**Description:** Displays the encoder actual position value Gn_XIST2 according to PROFIdrive.

**Recommend.:**
Possible causes of the error codes:
- Error code 4097 and 4098: Defective Control Unit hardware.
- Error codes 4099 and 4100: Too many measuring pulses have occurred.

**Notice:** The encoder position actual value must be requested using the encoder control word Gn_STW.13.

**Note:**
- in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).
- if GxZSW.15 = 1 (r0481), then an error code with the following significance is located in Gx_XIST2 (r0483):
  1: Encoder fault.
  2: Possible position shift in Gx_XIST1.
  3: Encoder parking not possible.
  4: Abort, reference mark search.
  5: Abort, retrieve reference value.
  6: Abort, flying measurement.
  7: Abort, retrieve measured value.
  8: Abort, absolute value transfer.
  3841: Function not supported.
  4097: Abort, reference mark search due to an initialization error.
  4098: Abort, flying measurement due to an initialization error.
  4099: Abort, reference mark search due to a measuring error.
  4100: Abort, flying measurement due to a measuring error.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**r0483[0...2]**

CO: Encoder actual position value Gn_XIST2 / Enc Gn_XIST2

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 1580, 1680, 4704, 4750

**P-Group:** Encoder  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

**Description:** Displays the encoder actual position value Gn_XIST2 according to PROFIdrive.

**Recommend.:**
Possible causes of the error codes:
- Error code 4097 and 4098: Defective Control Unit hardware.
- Error codes 4099 and 4100: Too many measuring pulses have occurred.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Notice:** The encoder position actual value must be requested using the encoder control word Gn_STW.13.

**Note:**
- in this value, the measuring gear (p0432, p0433) is only taken into account when the position tracking is activated (p0411.0 = 1).
- if GxZSW.15 = 1 (r0481), then an error code with the following significance is located in Gx_XIST2 (r0483):
  1: Encoder fault.
  2: Possible position shift in Gx_XIST1.
  3: Encoder parking not possible.
  4: Abort, reference mark search.
  5: Abort, retrieve reference value.
Parameters

List of parameters

6: Abort, flying measurement.
7: Abort, retrieve measured value.
8: Abort, absolute value transfer.
3841: Function not supported.
4097: Abort, reference mark search due to an initialization error.
4098: Abort, flying measurement due to an initialization error.
4099: Abort, reference mark search due to a measuring error.
4100: Abort, flying measurement due to a measuring error.

Description:
Displays the redundant coarse encoder position including CRC (Cyclic Redundancy Check).

Upper 16 bits:
CRC over the redundant coarse encoder position.

Lower 16 bits:
Redundant coarse encoder position.
On an SMx Sensor Module, the encoder coarse position count direction is opposite to r0482 (encoder actual value Gn_XIST1). The value contains 2 bit fine resolution.

With a DRIVE-CLiQ encoder, the encoder coarse position count direction is the same as r0482.

Dependency:
The values are valid when the safety position actual value sensing is activated (p0430.19 = 1).
Refer to: p0430

Note:
This absolute value does not change, contrary to r0482, when de-selecting the function "parking axis".

r0484 CO: Redundant coarse encoder position + CRC / Enc red pos+CRC

ENC
Can be changed: -
Data type: Unsigned32
P-Group: Encoder
Not for motor type: -

Min -
Max -

Description:
Displays the redundant coarse encoder position including CRC (Cyclic Redundancy Check).

Upper 16 bits:
CRC over the redundant coarse encoder position.

Lower 16 bits:
Redundant coarse encoder position.
On an SMx Sensor Module, the encoder coarse position count direction is opposite to r0482 (encoder actual value Gn_XIST1). The value contains 2 bit fine resolution.

With a DRIVE-CLiQ encoder, the encoder coarse position count direction is the same as r0482.

Dependency:
The values are valid when the safety position actual value sensing is activated (p0430.19 = 1).
Refer to: p0430

Note:
This absolute value does not change, contrary to r0482, when de-selecting the function "parking axis".

r0484[0...2] CO: Redundant coarse encoder position + CRC / Enc red pos+CRC

VECTOR_G
Can be changed: -
Data type: Unsigned32
P-Group: Encoder
Not for motor type: -

Min -
Max -

Description:
Displays the redundant coarse encoder position including CRC (Cyclic Redundancy Check).

Upper 16 bits:
CRC over the redundant coarse encoder position.

Lower 16 bits:
Redundant coarse encoder position.
On an SMx Sensor Module, the encoder coarse position count direction is opposite to r0482 (encoder actual value Gn_XIST1). The value contains 2 bit fine resolution.

With a DRIVE-CLiQ encoder, the encoder coarse position count direction is the same as r0482.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency:
The values are valid when the safety position actual value sensing is activated (p0430.19 = 1).
Refer to: p0430

Note:
This absolute value does not change, contrary to r0482, when de-selecting the function "parking axis".
List of parameters

r0485  CO: Measuring gear, encoder raw value incremental / Enc raw val incr

ENC  
Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -
 factoriesetting

description: Displays the raw value of the incremental encoder actual value before the measuring gear.

r0485[0...2]  CO: Measuring gear, encoder raw value incremental / Enc raw val incr

VECTOR_G  
Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -
 factoriesetting

description: Displays the raw value of the incremental encoder actual value before the measuring gear.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

r0486  CO: Measuring gear, encoder raw value absolute / Enc raw val abs

ENC  
Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -
 factoriesetting

description: Displays the raw value of the absolute encoder actual value before the measuring gear.

r0486[0...2]  CO: Measuring gear, encoder raw value absolute / Enc raw val abs

VECTOR_G  
Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -
 factoriesetting

description: Displays the raw value of the absolute encoder actual value before the measuring gear.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

r0487  Diagnostic encoder control word Gn_STW / Enc Gn_STW

ENC  
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned16  Dynamic index: -  Func. diagram: 1580, 4704, 4720, 4740
P-Group: Encoder  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -
 factoriesetting

description: Displays the encoder control word Gn_STW according to PROFIdrive for diagnostics.
Notice: Information on Gn_STW/Gn_ZSW should be taken from the corresponding product documentation.

Note: The signal source for the encoder control word is set with p0480.

**r0487[0...2]** Diagnostic encoder control word Gn_STW / Enc Gn_STW

**Description:** Displays the encoder control word Gn_STW according to PROFIdrive for diagnostics.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Request function 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Request function 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Request function 3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Request function 4</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Request command bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Request command bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Request command bit 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Flying measurement mode/search for reference mark</td>
<td>Flying measurement</td>
<td>Reference marks</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Request absolute value cyclic</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Request parking encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Request acknowledge encoder fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Value:**
- 0: No meas probe
- 1: DI/DO 9 (X122.10/X121.8)
- 2: DI/DO 10 (X122.12/X121.10)
- 3: DI/DO 11 (X122.13/X121.11)
- 4: DI/DO 13 (X132.10/X131.2)
- 5: DI/DO 14 (X132.12/X131.4)

**p0488** Measuring probe 1 input terminal / Meas probe 1 inp

**Description:** Sets the input terminal to connect probe 1.

**Value:**
- 0: No meas probe
- 1: DI/DO 9 (X122.10/X121.8)
- 2: DI/DO 10 (X122.12/X121.10)
- 3: DI/DO 11 (X122.13/X121.11)
- 4: DI/DO 13 (X132.10/X131.2)
- 5: DI/DO 14 (X132.12/X131.4)
### List of parameters

6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

**Dependency:**
Refer to: p0489, p0728

**Notice:**
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

To select the values:
For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

**Note:**
DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

#### p0488[0...2]
**Measuring probe 1 input terminal / Meas probe 1 inp**

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the input terminal to connect probe 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Can be changed:** U, T
**Data type:** Integer16
**P-Group:** Encoder
**Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Index:**
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

**Dependency:**
Refer to: p0489, p0728

**Notice:**
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

To select the values:
For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

**Note:**
DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

#### p0489
**Measuring probe 2 input terminal / Meas probe 2 inp**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>Sets the input terminal to connect probe 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Can be changed:** U, T
**Data type:** Integer16
**P-Group:** Encoder
**Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Parameters

List of parameters

4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Dependency:
Refer to: p0488, p0728

Notice:
To the terminal designation:
The first designation is valid for CU320, the second for CU310.
To select the values:
For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note:
DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

### p0489[0...2]
Measuring probe 2 input terminal / Meas probe 2 inp

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 4740</td>
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<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td>Min</td>
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<td>Factory setting</td>
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</tr>
<tr>
<td>0</td>
<td>8</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the input terminal to connect probe 2.

Value:
0: No meas probe
1: DI/DO 9 (X122.10/X121.8)
2: DI/DO 10 (X122.12/X121.10)
3: DI/DO 11 (X122.13/X121.11)
4: DI/DO 13 (X132.10/X131.2)
5: DI/DO 14 (X132.12/X131.4)
6: DI/DO 15 (X132.13/X131.5)
7: DI/DO 8 (X122.9/X121.7)
8: DI/DO 12 (X132.9/X131.1)

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency:
Refer to: p0488, p0728

Notice:
To the terminal designation:
The first designation is valid for CU320, the second for CU310.
To select the values:
For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

Note:
DI/DO: Bidirectional Digital Input/Output
The terminal must be set as input (p0728).
Refer to the encoder interface for PROFIdrive.
If parameterization is rejected, check whether the terminal is already being used in p0580, p0680, p2517 or p2518.

### p0491
Motor encoder fault response ENCODER / Fault resp ENCODER

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>5</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the behavior for the ENCODER fault response (motor encoder).
This means, for example, if an encoder fault occurs, encoderless operation can be automatically selected with a shutdown behavior that can be selected.
**Value:**
- 0: Encoder fault results in OFF2
- 1: Enc fault results in encoderless oper. and oper. continues
- 2: Encoder fault results in encoderless operation and OFF1
- 3: Encoder fault results in encoderless operation and OFF3
- 4: Encoder fault results in an armature short-cct int/DC braking
- 5: Enc fault results in encoderless op, operation continues, alarm

**Dependency:**
The following parameters are relevant for encoderless operation. Refer to: p0341, p0342, p1470, p1472, p1517, p1612, p1755
Refer to: F07575

**Caution:**
For a value = 1, 2, 3, the following applies:
- encoderless operation must have been started.

For a value = 1, the following applies:
- in spite of the motor encoder fault that has occurred, the motor continues to operate.

**Note:**
For a value = 1, 2, 3, the following applies:
- Refer to the status signal "encoderless operation due to a fault" (BO: r1407.13).
- Not possible for separately excited synchronous motors (p0300 = 5).

**Description:**
Sets the maximum permissible speed difference within the current controller sampling time for squarewave encoders.

**Dependency:**
Refer to: F31118, A31418

**Note:**
For a value of 0.0, the speed change monitoring is disabled.
if the set maximum speed difference is only exceeded for one sampling time of the current controller, then an appropriate alarm is output. However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.

**Description:**
Sets the maximum permissible velocity difference within the current controller sampling time for square-wave encoders.

**Dependency:**
Refer to: F31118, A31418

**Note:**
For a value of 0.0, velocity change monitoring is disabled.
if the set maximum velocity difference is only exceeded for one sampling time of the current controller, then an appropriate alarm is output. However, if the maximum speed difference is exceeded over several sampling times, then a corresponding fault is output.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0492</td>
<td>Maximum speed difference per sampling cycle / n_dif max/samp_cyc</td>
<td>Can be changed: U, T Calculated: CALC_MOD_REG Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32 Dynamic index: -</td>
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</tr>
<tr>
<td></td>
<td>P-Group: Encoder Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min, Max</td>
<td>0.00 [rpm] 210000.00 [rpm] 0.00 [rpm]</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0493</td>
<td>Zero mark selection, input terminal / ZM_sel inp_term</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16 Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min, Max</td>
<td>0 8 0</td>
</tr>
</tbody>
</table>

**p0492**

- **Description:** Sets the maximum permissible speed difference within the current controller sampling time.
- **Dependency:** Refer to: r1408
  - Refer to: F07902, F31118, A31418, F32118, A32418, F33118, A33418
- **Note:** For a value of 0.0, the speed change monitoring is disabled.
  - The following applies for square-wave encoders:
    - If the speed difference exceeds the threshold value p0492, depending on p0491, either encoderless closed-loop speed/torque control is selected or the drive is powered down with fault F3x118.
    - The following applies for other speed encoders:
      - If the speed difference exceeds threshold value p0492, in order to avoid subsequent faults, the old speed actual value is kept and after time p2178 shut down with fault F07902 (motor stalled).

**p0493**

- **Description:** Sets the input terminal for selecting the reference mark via BERO/switching signal when performing referencing with several zero marks.
  - The encoder interface supplies the position of the reference mark, which was detected immediately after the positive edge of the BERO signal.
- **Value:**
  - 0: No selection via BERO
  - 1: DI/DO 9 (X122.10/X121.8)
  - 2: DI/DO 10 (X122.12/X121.10)
  - 3: DI/DO 11 (X122.13/X121.11)
  - 4: DI/DO 13 (X132.10/X131.2)
  - 5: DI/DO 14 (X132.12/X131.4)
  - 6: DI/DO 15 (X132.13/X131.5)
  - 7: DI/DO 8 (X122.9/X121.7)
  - 8: DI/DO 12 (X132.9/X131.1)
- **Notice:**
  - For Cx32, NX10 and NX15, only DI/DO 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).
  - To the terminal designation:
    - The first designation is valid for CU320, the second for CU310.
- **Note:**
  - Refer to the encoder interface for PROFIdrive.
  - The terminal must be set as input (p0728).
  - For p0493 = 0 (factory setting) the following applies:
    - there is no logic operation between the reference mark search and an input signal.
  - For p0493 > 0, the following applies:
    - the positive edge of the input signal is evaluated. If the negative edge is to be evaluated, signal inversion must be parameterized via p0490.
    - if a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0580, p0680, p2517, or p2518.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0493[0...n]</td>
<td>Zero mark selection, input terminal / ZM_sel inp_term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the input terminal for selecting the reference mark via BERO/switching signal when performing referencing with several zero marks. The encoder interface supplies the position of the reference mark, which was detected immediately after the positive edge of the BERO signal.</td>
<td>0: No selection via BERO 1: DI/DO 9 (X122.10/X121.8) 2: DI/DO 10 (X122.12/X121.10) 3: DI/DO 11 (X122.13/X121.11) 4: DI/DO 13 (X132.10/X131.2) 5: DI/DO 14 (X132.12/X131.4) 6: DI/DO 15 (X132.13/X131.5) 7: DI/DO 8 (X122.9/X121.7) 8: DI/DO 12 (X132.9/X131.1)</td>
<td>For Cx32, NX10 and NX15, only DI/DO 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual). To the terminal designation: The first designation is valid for CU320, the second for CU310.</td>
<td>Refer to the encoder interface for PROFIdrive. The terminal must be set as input (p0728). For p0493 = 0 (factory setting) the following applies: - there is no logic operation between the reference mark search and an input signal. For p0493 &gt; 0, the following applies: - the positive edge of the input signal is evaluated. If the negative edge is to be evaluated, signal inversion must be parameterized via p0490. - if a parameter change is rejected, a check should be performed as to whether the input terminal is already being used in p0580, p0680, p2517, or p2518.</td>
</tr>
<tr>
<td>p0494[0...n]</td>
<td>Equivalent zero mark, input terminal / ZM_equiv input</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).</td>
<td>0: No equivalent zero mark (evaluation of the encoder zero mark) 1: DI/DO 9 (X122.10/X121.8) 2: DI/DO 10 (X122.12/X121.10) 3: DI/DO 11 (X122.13/X121.11) 4: DI/DO 13 (X132.10/X131.2) 5: DI/DO 14 (X132.12/X131.4) 6: DI/DO 15 (X132.13/X131.5) 7: DI/DO 8 (X122.9/X121.7) 8: DI/DO 12 (X132.9/X131.1)</td>
<td>For Cx32, NX10 and NX15, only DI/DO 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual). For p0494 = 0 (factory setting), the setting in p0495 is effective. To the terminal designation: The first designation is valid for CU320, the second for CU310.</td>
<td></td>
</tr>
</tbody>
</table>
**p0495** Equivalent zero mark, input terminal / ZM_equiv input

**ENC**
- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** 0
- **Max:** 8
- **Factory setting:** 0

**Description:** Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

**Value:**
- 0: No equivalent zero mark (evaluation of the encoder zero mark)
- 1: DI/DO 9 (X122.10/X121.8)
- 2: DI/DO 10 (X122.12/X121.10)
- 3: DI/DO 11 (X122.13/X121.11)
- 4: DI/DO 13 (X132.10/X131.2)
- 5: DI/DO 14 (X132.12/X131.4)
- 6: DI/DO 15 (X132.13/X131.5)
- 7: DI/DO 8 (X122.9/X121.7)
- 8: DI/DO 12 (X132.9/X131.1)

**Notice:** For Cx32, NX10 and NX15, only DI/DO 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).

For p0494 > 0, the setting in p0494 and p0495 is invalid.

To the terminal designation:
- The first designation is valid for CU320, the second for CU310.

**Note:** Refer to the encoder interface for PROFIdrive.

For p0495 = 0 (factory setting), the encoder zero mark is evaluated as zero mark.

For p0495 > 0, the following applies:
- Depending on the direction of motion, the positive or negative edge at the appropriate input is evaluated.
  - Increasing position actual values (r0482) --> the 0/1 edge is evaluated.
  - Decreasing position actual values (r0482) --> the 1/0 edge is evaluated.

Only one zero mark is supported. If function 2, 3 or 4 is selected, this results in a fault message in Gn_ZSW.

The inversion of the inputs via p0490 affects the function "referencing with equivalent zero mark". This is the reason that the edge evaluation is interchanged as a function of the direction of motion.

An input can only be assigned to one encoder as measuring probe 1, 2 or equivalent zero mark. Exception: The same encoder can be simultaneously used as measuring probe and equivalent zero mark as both functions cannot be simultaneously requested.

**p0495[0...2]** Equivalent zero mark, input terminal / ZM_equiv input

**VECTOR_G**
- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:** 0
- **Max:** 8
- **Factory setting:** 0

**Description:** Selects the input terminal for connecting an equivalent zero mark (external encoder zero mark).

**Value:**
- 0: No equivalent zero mark (evaluation of the encoder zero mark)
- 1: DI/DO 9 (X122.10/X121.8)
- 2: DI/DO 10 (X122.12/X121.10)
- 3: DI/DO 11 (X122.13/X121.11)
- 4: DI/DO 13 (X132.10/X131.2)
- 5: DI/DO 14 (X132.12/X131.4)
- 6: DI/DO 15 (X132.13/X131.5)
- 7: DI/DO 8 (X122.9/X121.7)
- 8: DI/DO 12 (X132.9/X131.1)
Index:  
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3  

Dependency:  
Refer to: p0494  

Notice:  
For Cx32, NX10 and NX15, only DI/DO 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).  
For p0494 > 0, the setting in p0494 and p0495 is invalid.  
To the terminal designation:  
The first designation is valid for CU320, the second for CU310.  

Note:  
Refer to the encoder interface for PROFIdrive.  
The terminal must be set as input.  
For p0495 = 0 (factory setting), the encoder zero mark is evaluated as zero mark.  
For p0495 > 0, the following applies:  
Depending on the direction of motion, the positive or negative edge at the appropriate input is evaluated.  
- increasing position actual values (r0482) --> the 0/1 edge is evaluated.  
- decreasing position actual values (r0482) --> the 1/0 edge is evaluated.  
Only one zero mark is supported. If function 2, 3 or 4 is selected, this results in a fault message in Gn_ZSW.  
The inversion of the inputs via p0490 affects the function "referencing with equivalent zero mark". This is the reason that the edge evaluation is interchanged as a function of the direction of motion.  
An input can only be assigned to one encoder as measuring probe 1, 2 or equivalent zero mark. Exception: The same encoder can be simultaneously used as measuring probe and equivalent zero mark as both functions cannot be simultaneously requested.  

**p0496 Encoder diagnostic signal selection / Enc diag select**  

<table>
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<tr>
<th>ENC</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
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<tr>
<td>Data type:</td>
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<td>Dynamic index:</td>
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<td>Func. diagram:</td>
<td>-</td>
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<td>P-Group:</td>
<td>Encoder</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
---|---|---
0 | 86 | 0

**Description:**  
Selects the trace signal to be output in r0497, r0498 and r0499 for encoder diagnostics.  

**Value:**  
0: Inactive  
1: r0497: Mechanical revolution  
10: r0498: Raw value, track A, r0499: Raw value, track B  
11: r0498: Fine position X (-A/2), r0499: Fine position Y (-B/2)  
12: r0498: Fine position Phi, r0499: -  
13: r0498: Offset correction X, r0499: Offset correction Y  
14: r0498: Phase correction X, r0499: Amplitude correction Y  
15: r0498: Cubic correction X, r0499: Fine position X  
16: r0498: oversampling channel A, r0499: oversampling channel B  
17: r0498: fan-out, amount, r0499: fan-out, number  
18: r0498: Oversampling angle, r0499: Oversampling amount  
20: r0498: Raw value, track C, r0499: Raw value, track D  
21: r0498: CD position X (-D/2), r0499: CD position Y (C/2)  
22: r0498: CD position Phi, r0499: CD pos. Phi - mech. revolution  
23: r0497: Zero mark status  
24: r0498: Raw value, track R, r0499: Zero mark status  
25: r0498: Raw value, track A, r0499: Raw value, track R  
30: r0497: Absolute position serial  
31: r0497: Absolute position, incremental  
32: r0497: Zero mark position  
33: r0497: Correction absolute position difference  
40: r0498: Raw temperature, r0499: Temperature in 0.1 °C  
41: r0498: Resistance in 0.1 Ohm, r0499: Temperature in 0.1 °C  
42: r0497: Resistance 2500 Ohm  
51: r0497: Absolute speed difference (dn/dt)  
52: r0497: Xact1 corrected quadrants  
Parameters

List of parameters

62: Analog sensor: r0498: Fine pos before characteristic, r0499: -
70: Resolver: r0498: Transformation ratio, r0499: phase
80: Spindle: r0498: Sensor S1 (raw), r0499: Sensor S4 (raw)
81: Spindle: r0498: Sensor S5 (raw), r0499: -
85: Spindle: r0498: Sensor S1 (cal), r0499: Sensor S4 (cal)
86: Spindle: r0498: Sensor S5 (cal), r0499: -

Dependency:
Refer to: r0497, r0498, r0499

Notice:
The setting option depends on the following properties:
Sensor Module type, hardware version, firmware version (Sensor Module and Control Units), order number (last digit).
Not all combinations are supported.

Note:
Re p0496 = 1: 360 ° <-> 2^32
Re p0496 = 10 (resolver): 2900 mV <-> 26214 dec
Re p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV <-> 21299 dec
Re p0496 = 11 (resolver): 2900 mV <-> 13107 dec, internal processor offset is corrected
Re p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV <-> 10650 dec, internal processor offset is corrected
Re p0496 = 12: 180 ° fine position <-> 32768 dec
Re p0496 = 13 (resolver): 2900 mV <-> 13107 dec
Re p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV <-> 10650 dec
Re p0496 = 14: 1 ° <-> 286 dec, 100% <-> 16384 dec
Re p0496 = 15: 100 % <-> 16384 dec
Re p0496 = 16 (resolver): channel A: 2900 mV <-> 26214 dec, channel B: 2900 mV <-> 26214 dec
Re p0496 = 16 (sin/cos 1 Vpp, EnDat) channel A: 500 mV <-> 21299 dec, channel B: 500 mV <-> 21299 dec
Re p0496 = 17 (resolver): absolute value: 2900 mV <-> 13107 dec, number: 1 ... 8
Re p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV <-> 10650 dec, number: 1 ... 8
Re p0496 = 18 (resolver): angle: signal period <-> 2^16, absolute value: 2900 mV <-> 13107 dec
Re p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period <-> 2^16, absolute value: 500 mV <-> 10650 dec
Re p0496 = 22: 180 ° <-> 32768 dec
Re p0496 = 23, 24: r0497.31 (r0499.15) set for at least 1 current controller cycle when encoder zero mark detected
Re p0496 = 24, 25: 500 mV <-> 21299 dec
Re p0496 = 30: Rotary: 1 singleturn measuring step <-> 1 dec, linear: 1 measuring step <-> 1 dec
Re p0496 = 31: Absolute position, incremental in 1/4 encoder pulses
Re p0496 = 32: Zero mark position in 1/4 encoder pulses
Re p0496 = 33: counter offset absolute value in 1/4 encoder pulses
Re p0496 = 40: r0498 <-> (R_KTY/1 kOhm - 0.9) * 32768
Re p0496 = 42: 2500 Ohm <-> 2^32
Re p0496 = 51: 1 rpm <-> 1000 dec
Re p0496 = 52: In 1/4 encoder pulses
Re p0496 = 60: voltage, channel A in mV, voltage, channel B in mV
Re p0496 = 61: Channel A: encoder periods <-> 2^16, channel B: encoder periods <-> 2^16
Re p0496 = 62: encoder periods <-> 2^16
Re p0496 = 70: r: 100% <-> 10000 dec, phase: 180 ° <-> 18000 dec
Re p0496 = 80, 81, 85, 86: 1V <-> 1000 inc

p0496[0...2]
Encoder diagnostic signal selection / Enc diag select

VECTOR_G

Can be changed: U, T
Data type: Integer16
P-Group: Encoder
Value: 0: Inactive
Min: 0
Not for motor type: -
Max: 86
Scaling: -
Expert list: 1
Description: Selects the trace signal to be output in r0497, r0498 and r0499 for encoder diagnostics.

Access level: 4
Calculated: -
Dynamic index: -
Units group: -
Unit selection: -
Function diagram: -
Factory setting 0

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List of parameters

10: r0498: Raw value, track A, r0499: Raw value, track B
11: r0498: Fine position X (-A/2), r0499: Fine position Y (-B/2)
12: r0498: Fine position Phi, r0499: Offset correction Y
13: r0498: Offset correction X, r0499: Offset correction Y
14: r0498: Phase correction X, r0499: Amplitude correction Y
15: r0498: Cubic correction X, r0499: Fine position X
16: r0498: oversampling channel A, r0499: oversampling channel B
17: r0498: fan-out, amount, r0499: fan-out, number
18: r0498: Oversampling angle, r0499: Oversampling amount
20: r0498: Raw value, track C, r0499: Raw value, track D
21: r0498: CD position X (-D/2), r0499: CD position Y (C/2)
22: r0498: CD position Phi, r0499: CD pos. Phi - mech. revolution
23: r0497: Zero mark status
24: r0498: Raw value, track R, r0499: Zero mark status
25: r0498: Raw value, track A, r0499: Raw value, track R
30: r0497: Absolute position serial
31: r0497: Absolute position, incremental
32: r0497: Zero mark position
33: r0497: Correction absolute position difference
40: r0498: Raw temperature, r0499: Temperature in 0.1 °C
41: r0498: Resistance in 0.1 Ohm, r0499: Temperature in 0.1 °C
42: r0497: Resistance 2500 Ohm
51: r0497: Absolute speed difference (dn/dt)
52: r0497: Xact1 corrected quadrants
62: Analog sensor: r0498: Fine pos before characteristic, r0499: -
70: Resolver: r0498: Transformation ratio, r0499: phase
80: Spindle: r0498: Sensor S1 (raw), r0499: Sensor S4 (raw)
81: Spindle: r0498: Sensor S5 (raw), r0499: -
85: Spindle: r0498: Sensor S1 (cal), r0499: Sensor S4 (cal)
86: Spindle: r0498: Sensor S5 (cal), r0499: -

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

Dependency:
Refer to: r0497, r0498, r0499

Notice:
The setting option depends on the following properties:
Sensor Module type, hardware version, firmware version (Sensor Module and Control Units), order number (last digit).
Not all combinations are supported.

Note:
Re p0496 = 1: 360 ° <-> 2^32
Re p0496 = 10 (resolver): 2900 mV <-> 26214 dec
Re p0496 = 10, 20 (sin/cos 1 Vpp, EnDat): 500 mV <-> 21299 dec
Re p0496 = 11 (resolver): 2900 mV <-> 13107 dec, internal processor offset is corrected
Re p0496 = 11, 21 (sin/cos 1 Vpp, EnDat): 500 mV <-> 10650 dec, internal processor offset is corrected
Re p0496 = 12: 180 ° fine position <-> 32768 dec
Re p0496 = 13 (resolver): 2900 mV <-> 13107 dec
Re p0496 = 13 (sin/cos 1 Vpp, EnDat): 500 mV <-> 10650 dec
Re p0496 = 14: 1 ° <-> 286 dec, 100% <-> 16384 dec
Re p0496 = 15: 100 % <-> 16384 dec
Re p0496 = 16: (resolver): channel A: 2900 mV <-> 26214 dec, channel B: 2900 mV <-> 26214 dec
Re p0496 = 16: (sin/cos 1 Vpp, EnDat) channel A: 500 mV <-> 21299 dec, channel B: 500 mV <-> 21299 dec
Re p0496 = 17 (resolver): absolute value: 2900 mV <-> 13107 dec, number: 1 ... 8
Re p0496 = 17 (sin/cos 1 Vpp, EnDat): absolute value 500 mV <-> 10650 dec, number: 1 ... 8
Re p0496 = 18 (resolver): angle: signal period <-> 2^16, absolute value: 2900 mV <-> 13107 dec
Re p0496 = 18 (sin/cos 1 Vpp, EnDat): angle: signal period <-> 2^16, absolute value: 500 mV <-> 10650 dec
Re p0496 = 22: 180 ° <-> 32768 dec
Re p0496 = 23, 24: r0497.31 (r0499.15) set for at least 1 current controller cycle when encoder zero mark detected
Re p0496 = 24, 25: 500 mV <-> 21299 dec
**Parameters**

**List of parameters**

| Re p0496 = 30: Rotary: 1 singleturn measuring step <-> 1 dec, linear: 1 measuring step <-> 1 dec |
| Re p0496 = 31: Absolute position, incremental in 1/4 encoder pulses |
| Re p0496 = 32: Zero mark position in 1/4 encoder pulses |
| Re p0496 = 33: counter offset absolute value in 1/4 encoder pulses |
| Re p0496 = 40: r0498 <-> (R_KTY/1 kOhm - 0.9) * 32768 |
| Re p0496 = 42: 2500 Ohm <-> 2^32 |
| Re p0496 = 51: 1 rpm <-> 1000 dec |
| Re p0496 = 52: In 1/4 encoder pulses |
| Re p0496 = 60: voltage, channel A in mV, voltage, channel B in mV |
| Re p0496 = 61: Channel A: encoder periods <-> 2^16, channel B: encoder periods <-> 2^16 |
| Re p0496 = 62: encoder periods <-> 2^16 |
| Re p0496 = 70: r. 100% <-> 10000 dec, phase: 180 ° <-> 18000 dec |
| Re p0496 = 80, 81, 85, 86: 1V <-> 1000 inc |

**r0497 Encoder diagnostic signal double word / Enc diag DW**

| ENC | Can be changed: - | Calculated: - | Access level: 4 |
| Dynamic index: - | Func. diagram: - |
| P-Group: Encoder | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:** Displays the trace signal for encoder diagnostics (double word).
The signal to be output is selected in p0496.

**Dependency:** Refer to: p0496, r0498, r0499

**r0497[0...2] CO: Encoder diagnostic signal double word / Enc diag DW**

| VECTOR_G | Can be changed: - | Calculated: - | Access level: 4 |
| Dynamic index: - | Func. diagram: - |
| P-Group: Encoder | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:** Displays the trace signal for encoder diagnostics (double word).
The signal to be output is selected in p0496.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Dependency:** Refer to: p0496, r0498, r0499

**r0498 Encoder diagnostic signal low word / Enc diag low word**

| ENC | Can be changed: - | Calculated: - | Access level: 4 |
| Dynamic index: - | Func. diagram: - |
| P-Group: Encoder | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:** Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.

**Dependency:** Refer to: p0496, r0497, r0499
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0499 CO</td>
<td>CO: Encoder diagnostic signal low word / Enc diag low word</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0498[0...2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0499 CO</td>
<td>Encoder diagnostic signal high word / Enc diag high word</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0498[0...2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0500</td>
<td>Technology application / Tec application</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**List of parameters**

**Description:**
Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.

**Dependency:**
Refer to: p0496, r0497, r0499

**Description:**
Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.

**Dependency:**
Refer to: p0496, r0497, r0498

**Description:**
Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.

**Dependency:**
Refer to: p0496, r0497, r0498

**Description:**
Sets the technology application.
The parameter influences the calculation of open-loop and closed-loop control parameters that is e.g. initiated using p0578.

**Value:**
0: Standard drive (VECTOR)
1: Pumps and fans
2: Sensorless closed-loop control down to f = 0 (passive loads)

**Dependency:**
Refer to: p2175, p2177
Note: The calculation of parameters dependent on the technology application can be called up as follows:
- when exiting quick commissioning using p3900 > 0
- when writing p0340 = 1, 3, 5
- when writing p0578 = 1

For p0500 = 0 and when the calculation is initiated, the following parameters are set:
p1574 = 10 V (for separately-excited synchronous motors: 20 V)
p1750.2 = 0
p1802 = 4 (SVM/FLB without overcontrol)
p1803 = 106 %

For p0500 = 1 and when the calculation is initiated, the following parameters are set:
p1574 = 2 V (for separately-excited synchronous motors: 4 V)
p1750.2 = 0
p1802 = 9 (edge modulation), if r0192.0 = 1
p1802 = 4, if r0192.0 = 0
p1803 = 106 %

For p0500 = 2 and when the calculation is initiated, the following parameters are set:
p1574 = 2 V (for separately-excited synchronous motors: 4 V)
p1750.2 = 1: Encoderless control of the induction motor is effective down to zero frequency.
This operating mode is possible for passive loads. These include applications where the load does not generate regenerative torque when breaking away and the motor comes to a standstill (zero speed) itself when the pulses are inhibited.
p1802 = 4 (SVM/FLB without overcontrol)
p1803 = 106 %

The setting of p1750 is only relevant for induction motors.
p1802 and p1803 are only relevant, in all cases, if a sine-wave output filter (p0230 = 3, 4) has not been selected.

---

### p0505 Selecting the system of units / Unit sys select

<table>
<thead>
<tr>
<th>B_INF, ENC, VECTOR_G</th>
<th>Can be changed: C2(5)</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Applications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the actual system of units.

**Value:**
1: SI system of units
2: System of units, referred/SI
3: US system of units
4: System of units, referred/US

**Dependency:**
The parameter cannot be changed when master control is active.

**Caution:**
If a per unit representation is selected and if the reference parameters (e.g. p2000) are subsequently changed, then the physical significance of several control parameters is also adapted at the same time. As a consequence, the control behavior can change (see p1576, p1621, p1744, p1752, p1755 and p1609, p1612, p1619, p1620).

**Note:**
Reference parameter for the unit system % are, for example, p2000 ... p2004. Depending on what has been selected, these are displayed using either SI or US units.

### p0528 Controller gain, system of units / Ctrl_gain_unit_sys

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: C2(5)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Applications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the system of units for the controller gains.
Value:
0: Representation, physical/% (p0505)
1: Representation, no dimensions (referred)

Note:
For p0528 = 0 (physical%), the following applies:
Using p0505, the dependent parameters can be changed over between physical and % representation.
For SERVO (r0107) the following applies:
The parameter is pre-assigned a value of 0 and cannot be changed.

### p0528
**Controller gain, system of units / Ctrl_gain unit_sys**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed: C2(5)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Applications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the system of units for the controller gains.

**Value:**
0: Representation, physical/% (p0505)
1: Representation, no dimensions (referred)

**Note:**
For VECTOR (r0107) the following applies:
The parameter is pre-assigned a value of 1 and cannot be changed.

### p0530[0...n]
**Bearing version selection / Bearing vers sel**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed: C2(1, 3)</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: FEM</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>104</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the bearing version.
Corresponding to the bearing version entered, its code number (p0531) is automatically set.
0 = No selection
1 = Manual entry
101 = STANDARD
102 = PERFORMANCE
103 = HIGH PERFORMANCE
104 = ADVANCED LIFETIME

**Dependency:**
Refer to: p0301, p0531, p0532, p1082

**Caution:**
For p0530 = 101, 102, 103, 104, the maximum bearing speed (p0532) is write protected. Write protection is withdrawn with p0530 = 1.

**Notice:**
If p0530 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

**Note:**
For a motor with DRIVE-CLiQ, p0530 can only be set to 1.

### p0531[0...n]
**Bearing code number selection / Bearing codeNo sel**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed: C2(3)</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: FEM</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Display and setting the code number of the bearing.
When setting p0301 and p0530 the code number is automatically preassigned and is write protected. The information in p0530 should be observed when removing write protection.

**Dependency:**
Refer to: p0301, p0530, p0532, p1082
Parameters
List of parameters

Notice: If p0531 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

Note: p0531 cannot be changed on a motor with DRIVE-CLiQ.

<table>
<thead>
<tr>
<th>p0532[0...n]</th>
<th>Bearing maximum speed / Bearing n_max</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1, 3)</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Dynamic index: MDS, p0130</td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>0.0 [rpm]</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>210000.0 [rpm]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>0.0 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the maximum speed of the bearing.

Dependency: Refer to: p0301, p0530, p1082

Caution: This parameter is pre-assigned in the case of motors from the motor list (p0301) if a bearing version (p0530) is selected. When selecting a catalog motor, this parameter cannot be changed (write protection). The information in p0530 should be observed when removing write protection.

Notice: If p0532 is changed during quick commissioning (p0010 = 1), then the maximum speed p1082, which is also associated with quick commissioning, is pre-assigned appropriately. This is not the case when commissioning the motor (p0010 = 3). The maximum speed of the bearing is factored into the limit for the maximum speed p1082.

<table>
<thead>
<tr>
<th>r0565[0...15]</th>
<th>CO: Probe time stamp / Probe time stamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Description: Display parameters for MT_ZS_1 to MT_ZS_16
Displays the measuring time for an edge at the digital input for the "central measuring probe evaluation stage3" function.
The measuring time is specified as 16-bit value with a resolution of 0.25 µs.
Priority: MT1..MT8, oldest...newest time stamp

<table>
<thead>
<tr>
<th>r0566[0...3]</th>
<th>CO: Probe time stamp reference / Prb timestamp ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
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</tbody>
</table>

Description: Display parameters for MT_ZSB1 to MT_ZSB4

<table>
<thead>
<tr>
<th>r0567</th>
<th>CO: Probe diagnostics word / Probe diag word</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Description: Display parameters for MT_DIAG
### p0570 Inhibit list values effective number / Inhib list no

**VECTOR**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned8  
**Dynamic index:** -  
**P-Group:** Applications  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** 0  
**Max** 50  
**Factory setting** 0

**Description:** Sets the number of parameters in the inhibit list p0571 that should be withdrawn from the automatic motor and closed-loop control parameter calculation (p0340, p0578), starting from index 0.

**Note:** Defines the number of entries in p0571 that should be taken into account. This means that a value of 0 de-activates the complete list.

### p0571[0...49] Inhibit list, motor/closed-loop control parameter calculation / Inhib list calc

**VECTOR**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Integer16  
**Dynamic index:** -  
**P-Group:** Applications  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** 0  
**Max** 2142  
**Factory setting** 0

**Description:** The inhibit list contains parameters that should be withdrawn from the automatic motor and closed-loop control parameter calculation (p0340, p0578).

**Value:**
- 0: No parameter
- 600: Motor temperature sensor
- 640: Current limit
- 1082: Maximum speed
- 1460: Speed controller P gain
- 1462: Speed controller integral time
- 1470: Speed controller P gain, encoderless
- 1472: Speed controller integral time, encoderless
- 1520: Torque limit upper/motoring
- 1521: Torque limit lower/regenerative
- 1530: Power limit motoring
- 1531: Power limit regenerative
- 1590: Flux controller P gain
- 1592: Flux controller integral time
- 2141: Speed threshold 1
- 2142: Hysteresis speed 1

**Note:** p0570 defines the number of entries (starting at index 0) for which the inhibit should apply. p0572 can be used to define for which drive data sets the inhibit list should apply.

If a motor data set is entered into a parameter number, then this is not overwritten as soon as only one drive data set refers to the motor data set (p0186).

### p0572[0...n] Activate/de-activate inhibit list / Inh_list act/deact

**VECTOR**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Integer16  
**Dynamic index:** DDS, p0180  
**P-Group:** Applications  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** 0  
**Max** 1  
**Factory setting** 0

**Description:** Setting for activating/de-activating the inhibit list.

Depending on the setting, the parameters of the inhibit list (p0571) should be overwritten when calculating the motor and closed-loop control parameters for the particular drive data set (DDS).

**Value:**
- 0: No
- 1: Yes
**p0573**  
Inhibit automatic reference value calculation / Inhibit calc  

**Description:** Setting to inhibit the calculation of reference parameters (e.g. p2000) when automatically calculating the motor and closed-loop control parameters (p0340, p3900).  

**Value:**  
0: No  
1: Yes  

**Notice:** The inhibit for the reference value calculation is canceled when new motor parameters (e.g. p0305) are entered and only one drive data set exists (p0180 = 1). This is the case during initial commissioning.  
Once the motor and control parameters have been calculated (p0340, p3900), the inhibit for the reference value calculation is automatically re-activated.  

**Note:**  
If value = 0:  
The automatic calculation (p0340, p3900) overwrites the reference parameters.  
If value = 1:  
The automatic calculation (p0340, p3900) does not overwrite the reference parameters.  

**p0578[0...n]**  
Calculate technology-dependent parameters / Calc tec par  

**Description:** This parameter is used to calculate all parameters that depend on the technology of the application (p0500). All of the parameters are calculated that can also be determined using p0340 = 5.  

**Value:**  
0: No calculation  
1: Complete calculation  

**Note:** At the end of the calculations, p0578 is automatically set to 0.  

**p0595**  
Technological unit selection / Tech unit select  

**Description:** Selects the units for the parameters of the technology controller.  

**Value:**  
1: %  
2: 1 referred, no dimensions  
3: bar  
4: °C  
5: Pa  
6: ltr/s  
7: m³/s  
8: ltr/min  
9: m³/min
10: ltr/h
11: m³/h
12: kg/s
13: kg/min
14: kg/h
15: t/min
16: t/h
17: N
18: kN
19: Nm
20: psi
21: °F
22: gallon/s
23: inch³/s
24: gallon/min
25: inch³/min
26: gallon/h
27: inch³/h
28: lb/s
29: lb/min
30: lb/h
31: lbf
32: lbf ft

Dependency:
Only units of parameters with unit group 9_1 can be changed over using this parameter.
Refer to: p0596

p0596  Technological unit reference quantity / Tech unit ref qty
VECTOR_G
(Tech_ctrl)
Can be changed: T
Data type: FloatingPoint32
P-Group: -
Not for motor type: -
Min
0.01
Max
340.28235E36
Access level: 1
Factory setting
1.00

Description:
Sets the reference quantity for the technological units.
When changing over using changeover parameter p0595 to absolute units, all of the parameters involved refer to the reference quantity.
Dependancy:
Refer to: p0595
Notice:
When changing over from one technological unit into another, or when changing the reference parameter, a changeover is not made.

p0600[0...n]  Motor temperature sensor for monitoring / Mot temp_sensor
VECTOR_G
Can be changed: C2(3), U, T
Data type: Integer16
P-Group: Motor
Not for motor type: -
Min
0
Max
21
Access level: 2
Factory setting
0

Description:
Sets the sensor to monitor the motor temperature.
Value:
0: No sensor
1: Temperature sensor via encoder 1
2: Temperature sensor via encoder 2
3: Temperature sensor via encoder 3
10: Temperature sensor via a BICO interconnection
11: Temperature sensor via Motor Module / CU terminals
20: Temperature sensor via a BICO interconnection p0608
21: Temperature sensor via a BICO interconnection p0609
Dependancy:
Refer to: r0458, p0601, p0603

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Caution: If, for a selected temperature sensor (p0600 > 0), the motor temperature sensor is not connected but another sensor, then the temperature adaptation of the motor resistances must be switched out. Otherwise, in controlled-loop operation, torque errors will occur that will mean that the drive will not be able to be stopped.

Notice: The parameter is calculated in the drive using p0340 and is inhibited for p0340 > 0.

Re p0600 = 0:
With induction motors, the motor temperature is calculated using the motor temperature model (see also p0612.1).

Re p0600 = 1, 2, 3:
Bimetallic switch (p0601 = 4) and PT100 temperature sensor (p0601 = 5) are not supported.

Re p0600 = 10:
The BICO interconnection should be executed via connector input p0603.

Re p0600 = 11:
For SINAMICS S120 AC Drive (AC/AC) and using the Control Unit Adapter CUA31, the temperature sensor is connected at the adapter (X210).

Re p0600 = 20, 21:
The BICO interconnection should be executed via connector input p0608 or p0609.

Associated parameters: p0601, p4600 ... p4603, p4610 ... p4613

**p0601** Temperature sensor, sensor type / Temp_sens type

<table>
<thead>
<tr>
<th>B_INF</th>
<th>Can be changed: C2(3), U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the sensor type for the temperature measurement at input X21 (booksize) or X41 (chassis).
The measured value is displayed in r0035.

Value:

0: No sensor
1: PTC alarm & timer
2: KTY84
4: Bimetallic NC contact alarm & timer

Dependency:
Refer to: r0035

Note: The measured value display depends on the selected sensor type.

Re p0601 = 0 (no sensor):
-> r0035 = -200 °C

Re p0601 = 1 (PTC alarm & timer):
Tripping resistance = 1650 Ohm (lower resistance --> r0035 = -50 °C, higher resistance --> r0035 = 250 °C).

Re p0601 = 2 (KTY84):
Displays the temperature in °C.

Re p0601 = 4 (bimetallic NC contact alarm & timer):
r0035 = -50 °C
-> The tripping resistance is less than 100 Ohm (bimetallic NC contact is closed or has a short-circuit).
r0035 = 250 °C
-> The tripping resistance is greater than 100 Ohm (bimetallic NC contact is open, not connected or has a wire breakage).

When using the following components, a value of 4 is set as the factory setting and can no longer be changed:
- Basic Line Module (BLM) with internal Braking Module.
- Active Line Module (ALM) with line filter Active Interface Module (AIM, p0220[0] = 41 ... 45).

In these cases, in addition to the temperature display, the temperature is also monitored.
### Motor temperature sensor type / Mot_temp_sens type

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0601[0...n]</td>
<td>Motor temperature sensor type</td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(3), U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: MDS, p0130</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Func. diagram: 8016</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>0</td>
<td>11</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the sensor type for the motor temperature monitoring.

**Value:**
- 0: No sensor
- 1: PTC alarm & timer
- 2: KTY84
- 3: KTY84 and PTC (only for motors with DRIVE-CLiQ)
- 4: Bimetallic NC contact alarm & timer (only for temp_eval via MM)
- 5: PT100
- 10: Evaluation via several temperature channels SME12x
- 11: Evaluation via several temperature channels BICO

**Dependency:**
The thermal motor model is only calculated for p0612.1 = 1. Refer to: r0458, p0600, p0612

**Note:**
The temperature sensor for the temperature evaluation is set in p0600.
For p0600 = 10 (temperature sensor via a BICO interconnection), the setting in p0601 has no significance.
Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

Re p0601 = 1 (PTC alarm & timer):
Tripping resistance = 1650 Ohm.
After the tripping resistance has been exceeded, an appropriate alarm is output and after the delay time set in p0606 has expired, an appropriate fault is output.
Re p0601 = 3 (KTY84 and PTC (only for motors with DRIVE-CLiQ)):
For motors with DRIVE-CLiQ and 2 temperature sensors, the value is automatically set.
Re p0601 = 4 (bimetallic NC contact alarm & timer (only for temperature evaluation via the Motor Module)):
Tripping resistance = 100 Ohm.
After tripping, an appropriate alarm is output and after the delay time set in p0606 has expired, an appropriate fault is output.
Re p0601 = 5 (PT100):
It is only possible to evaluate a PT100 for p0600 = 11 and r0192 bit 15 = 1.
Re p0601 = 10 (evaluation through several temperature channels (SME12x)):
Not permitted for p0600 = 0, 10, 11.
Associated parameters: p4600 ... p4603 (can be switched via EDS)
For r0458.8 = 1, a temperature evaluation is supported through several temperature channels.

**Examples:**
- When evaluating using SME120 or SME125, 4 temperature channels are available (parameterized using p4600, p4601, p4602, p4603).
- When evaluating using CU310 and CUA32, 2 temperature channels are available (encoder interface, parameterization via p4600 / terminal block, parameterization via p4601).
Re p0601 = 11 (evaluation via several temperature channels (BICO)):
Not permitted for p0600 = 0, 10, 11.
Associated parameters: p4610 ... p4613 (can be switched via MDS)
### p0602 Par_circuit power unit number, temperature sensor / PU_No temp_sensor

<table>
<thead>
<tr>
<th>Data type</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Expert list:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned16</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the power unit number to which the temperature sensor is connected. The value corresponds to the Power unit Data Set number (PDS) of the power unit. The number of power unit data sets is defined in p0120.

### p0603 CI: Motor temperature signal source / Mot temp S_src

<table>
<thead>
<tr>
<th>Data type</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Expert list:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned32 / Float32</td>
<td>-</td>
<td>2</td>
<td>8016</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to evaluate the motor temperature via a BICO interconnection.

**Dependency:**
Refer to: p0600

**Note:**
- Temperature sensor KTY: Valid temperature range -48 °C ... 248 °C.
- PTC temperature sensor:
  - For a value = -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC.
  - For a value = 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC.
- When using a Terminal Module 31 (TM31), the following applies:
  - the sensor type used is set using p4100.
  - the temperature signal is interconnected using CO: r4105.

### p0604[0...n] Mot_temp_mod 1/KTY alarm threshold / Mod 1/KTY A thresh

<table>
<thead>
<tr>
<th>Data type</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Expert list:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>8016</td>
<td>MDS, p0130</td>
<td>21_1</td>
<td>1</td>
<td>0.0 °C</td>
<td>200.0 °C</td>
<td>130.0 °C</td>
</tr>
</tbody>
</table>

**Description:**
Sets the alarm threshold for monitoring the motor temperature for motor temperature model 1 or KTY. After the alarm threshold is exceeded, alarm A07910 is output and timer (p0606) is started.

**Dependency:**
- Refer to: p0606, p0612
- Refer to: F07011, A07910
- Refer to: p0505

**Caution:**
When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.

**Note:**
- The hysteresis is 2 K.
- When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).
**List of parameters**

### p0605[0...n]
**Mot_temp_mod 1/2 threshold / Threshold**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0605</td>
<td>Sets the threshold for monitoring the motor temperature for motor temperature model 1/2. Motor temperature model 1 (p0612.0 = 1): alarm threshold - Alarm A07910 is output after the alarm threshold is exceeded. Motor temperature model 2 (p0612.1 = 1): fault threshold - Fault F07911 is output after the fault threshold is exceeded.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>p0505</td>
<td>1</td>
<td>0.0 [°C] 200.0 [°C] 145.0 [°C]</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0606, p0611, p0612
- Refer to: F07011, A07910

**Caution:**
- When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection.
- The hysteresis is 2 K.
- When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

### p0606[0...n]
**Mot_temp_mod 2/KTY timer / Mod 2/KTY t_timer**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0606</td>
<td>Sets the timer for monitoring the motor temperature for motor temperature model 2 or KTY. This timer is started when the temperature alarm threshold (p0604) is exceeded. If the timer has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F07011 is output. If the temperature fault threshold (p0605) is prematurely exceeded before the timer has expired, then fault F07011 is immediately output.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.000 [s] 600.000 [s] 0.000 [s]</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0604, p0605
- Refer to: F07011, A07910

**Note:**
- With p0606 = 0 s, the timer is de-activated and only the fault threshold is effective.
- KTY sensor: When setting the minimum value, the timer is disabled and a fault is not output until p0605 is exceeded.
- PTC sensor, bimetallic NC contact: The timer minimum value has no special significance.

### p0607[0...n]
**Temperature sensor fault timer / Sensor fault time**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0607</td>
<td>Sets the timer between the output of alarm and fault for a temperature sensor fault. If there is a sensor fault, this timer is started. If the sensor fault is still present after the timer has expired, a corresponding fault is output.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>MDS, p0130</td>
<td>-</td>
<td>_</td>
<td>1</td>
<td>0.000 [s] 600.000 [s] 0.100 [s]</td>
</tr>
</tbody>
</table>

**Notice:**
- The parameterized time is internally rounded-off to an integer multiple of 48 ms.

**Note:**
- If the motor is an induction motor, the timer is switched off when setting the minimum value and no alarm is output. Temperature monitoring is then based on the thermal model.
**Parameters**

**List of parameters**

---

**p0608[0...3]**

**CI: Motor temperature signal source 2 / Mot_temp S_src 2**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(3), T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 8016</td>
<td></td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2006</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets signal source 2 to evaluate the motor temperature via a BICO interconnection.

**Index:**
- [0] = Motor temperature channel 1
- [1] = Motor temperature channel 2
- [3] = Motor temperature channel 4

**Dependency:**
Refer to: p0600

**Note:**
- Temperature sensor KTY:
  - Valid temperature range: -48 °C ... 248 °C.
- Temperature sensor PTC/bimetal:
  - For a value of -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC (bimetal contact closed).
  - For a value of 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC (bimetal contact open).
- When using a Terminal Module 120 (TM120), the following applies:
  - the sensor type used is set using p4100.
  - the temperature signal is interconnected using connector output r4105.

---

**p0609[0...3]**

**CI: Motor temperature signal source 3 / Mot_temp S_src 3**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(3), T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 8016</td>
<td></td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2006</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets signal source 3 to evaluate the motor temperature via a BICO interconnection.

**Index:**
- [0] = Motor temperature channel 1
- [1] = Motor temperature channel 2
- [3] = Motor temperature channel 4

**Dependency:**
Refer to: p0600

**Note:**
- Temperature sensor KTY:
  - Valid temperature range: -48 °C ... 248 °C.
- Temperature sensor PTC/bimetal:
  - For a value of -50 °C, the following applies: Motor temperature < nominal response temperature of the PTC (bimetal contact closed).
  - For a value of 250 °C, the following applies: Motor temperature >= nominal response temperature of the PTC (bimetal contact open).
- When using a Terminal Module 120 (TM120), the following applies:
  - the sensor type used is set using p4100.
  - the temperature signal is interconnected using connector output r4105.
### p0610[0...n] Motor overtemperature response / Mot temp response

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the system response when the motor temperature reaches the alarm threshold.</th>
</tr>
</thead>
</table>
| Value:       | 0: No response only alarm no reduction of I_max  
|              | 1: Alarm with reduction of I_max and fault                                         
|              | 2: Alarm and fault no reduction of I_max                                          |
| Dependency:  | Refer to: p0601, p0604, p0605  
|              | Refer to: F07011, A07910                                                        |
| Note:        | The I_max reduction is not executed for PTC (p0601 = 1) or bimetallic NC contact (p0601 = 4). The I_max reduction results in a lower output frequency. |

### p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T

| Description: | Sets the winding time constant.  
|              | The time constant specifies the warm-up time of the cold stator winding when loaded with the motor standstill current up until a temperature rise of 63 % of the continuously permissible winding temperature has been reached. |
| Dependency:  | This parameter is only used for synchronous motors (p3030 = 2xx).  
|              | Refer to: r0034, p0612, p0615  
|              | Refer to: F07011, A07910                                                         |
| Caution:     | This parameter is automatically pre-set from the motor database for motors from the motor list (p3031).  
|              | When selecting a catalog motor, this parameter cannot be changed (write protection). Information in p3030 should be carefully observed when removing write protection. |
| Note:        | When parameter p0611 is reset to 0, then this switches out the thermal I2t motor model (also refer to p0612).  
|              | If no temperature sensor is parameterized, then the ambient temperature for the thermal motor model is referred to p0625. |

### p0612[0...n] Mot_temp_mod activation / Mot_temp_mod act

| Description: | Setting to activate the motor temperature model. |
| Bit field:   | Bit | Signal name | 1 signal | 0 signal | FP |
|              | 00  | Activating motor temperature model 1 (I2t) | Yes | No | - |
|              | 01  | Activate motor temperature model 2 | Yes | No | - |
| Dependency:  | Refer to: r0034, p0604, p0605, p0606, p0611, p0615, p0625, p0626, p0627, p0628  
|              | Refer to: F07011, A07012, A07910                                                   |
| Note:        | Mot_temp_mod: motor temperature model  
|              | Re bit 00:                        
|              | This bit is only used for permanent-magnet synchronous motors (p3030 = 2xx). It is only possible to activate this motor temperature model (I2t) for a time constant greater than zero (p0611 > 0). |
Re bit 01:
This bit is used to activate/deactivate the motor temperature model for induction motors.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mot_temp_mod 1 (I2t) fault threshold / I2t F thresh</strong></td>
<td>Sets the fault threshold for monitoring the motor temperature for motor temperature model 1 (I2t). - Fault F07911 is output after the fault threshold is exceeded. <strong>Dependency:</strong> The parameter is only used for permanent-magnet synchronous motors (p0300 = 2xx). Refer to: r0034, p0611, p0612. Refer to: F07011, A07012. <strong>Caution:</strong> When selecting a catalog motor (p0301), this parameter is automatically pre-assigned and is write protected. Information in p0300 should be carefully observed when removing write protection. <strong>Note:</strong> The hysteresis is 2 K.</td>
</tr>
<tr>
<td><strong>Motor overtemperature alarm threshold 1 / Mot temp alarm 1</strong></td>
<td>Sets the alarm threshold 1 for monitoring the motor temperature. <strong>Note:</strong> The alarm threshold is not, as for p0604, coupled to the timer p0606. The hysteresis for canceling the fault is 2 K.</td>
</tr>
<tr>
<td><strong>Thermal adaptation, stator and rotor resistance / Mot therm_adapt R</strong></td>
<td>Sets the thermal adaptation of the stator/primary section resistance and rotor/secondary section resistance according to r0395 and r0396. <strong>Value:</strong> 0: No thermal adaptation of stator and rotor resistances 1: Resistances adapted to the temperatures of the thermal model 2: Resistances adapted to the measured stator winding temperature <strong>Note:</strong> For p0620 = 1, the following applies: The stator resistance is adapted using the temperature in r0035 and the rotor resistance together with the model temperature in r0633. For p0620 = 2, the following applies: The stator resistance is adapted using the temperature in r0035. If applicable, the rotor temperature for adapting the rotor resistance is calculated from the stator temperature (r0035) as follows: [ \theta_{R} = (r0628 + r0625) / (r0627 + r0625) \times r0035 ] For separately-excited synchronous motors and p0620 = 1, p0620 = 2 is internally and automatically used for calculating. There is no thermal model to adapt the damping resistances.</td>
</tr>
</tbody>
</table>
### p0621[0...n]

**Identification stator resistance after restart / **Rst_ident Restart**

**VECTOR_G (n/M)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(3), T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Motor</td>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>PEM, REL, FEM</td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td><strong>Max</strong></td>
<td>2</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Selects the identification of the stator resistance after booting the Control Unit (only for vector control).

The identification is used to measure the actual stator resistance and from the ratio of the result of motor data identification (p0350) to the matching ambient temperature (p0625) the actual mean temperature of the stator winding is calculated. The result is used to initialize the thermal motor model.

- **p0621 = 1:** Identification of the stator resistance only when the drive is powered up for the first time (pulse enable) after booting the Control Unit.
- **p0621 = 2:** Identification of the stator resistance every time the drive is powered up (pulse enable).

**Value:**
- 0: No Rs identification
- 1: Rs identification after switching-on again
- 2: Rs identification after switching-on each time

**Dependency:**
- perform motor data identification (see p1910) with cold motor.
- enter ambient temperature at time of motor data identification in p0625.

Refer to: p0622, r0623

**Notice:**
The calculated stator temperature can only be compared with the measured value of a temperature sensor (KTY) to a certain extent, as the sensor is usually the warmest point of the stator winding, whereas the measured value of identification reflects the mean value of the stator winding.

Furthermore this is a short-time measurement with limited accuracy that is performed during the magnetizing phase of the induction motor.

**Note:**
The measurement is carried out:
- For induction motors
- When vector control is active (see p1300)
- If a temperature sensor (KTY) has not been connected
- When the motor is at a standstill when switched on

When a flying restart is performed on a rotating motor, the temperatures of the thermal motor model are set to a third of the overtemperatures. This occurs only once, however, when the CU is booted (e.g. after a power failure).

If identification is activated, the magnetizing time is determined via p0622 and not via p0346. Quick magnetizing (p1401.6) is de-energized internally and alarm A07416 is displayed. The speed is enabled after completion of the measurement.

### p0622[0...n]

**Motor excitation time for Rs_ident after powering up again / t_excit Rs_id**

**VECTOR_G (n/M)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(3), U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_REG</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Motor</td>
<td><strong>Units group:</strong></td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>PEM, REL, FEM</td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000 [s]</td>
<td><strong>Max</strong></td>
<td>20.000 [s]</td>
<td>Factory setting</td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the excitation time of the motor for the stator resistance identification after powering up again (restart).

**Dependency:**
Refer to: p0621, r0623

**Note:**
For p0622 < p0346 the following applies:

If identification is activated, the magnetizing time is influenced by p0622. The speed is enabled after measurement is complete, but not before the time in p0346 has elapsed (see r0056 bit 4). The time taken for measurement also depends on the settling time of the measured current.
Parameters

List of parameters

For p0622 >= p0346 the following applies:
Parameter p0622 is internally limited to the magnetizing time p0346, so that p0346 represents the maximum possible magnetizing time during identification. The entire measurement period (magnetizing plus measurement settling time plus measuring time) will always be greater than p0346.

**r0623**

Stator resistance of Rs identification after powering up again / R_stator Rs-Id

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the identified stator resistance after the Rs identification after powering up again.

**Dependency:**
Refer to: p0621, p0622

**p0624[0...n]**

Motor temperature offset PT100 / Mot T_offset PT100

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(3), U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: 8016</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: 21_2</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-100.0 [K]</td>
<td>100.0 [K]</td>
<td>0.0 [K]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the temperature offset for the PT100 measured value.
If there is a difference between the motor temperature displayed in r0035 and the actual motor temperature, this offset can be entered in this parameter, thereby compensating for the difference.

**Dependency:**
Refer to: p0600, p0601, p0602

**Note:**
The parameter only takes effect with the following settings:
- Temperature sensor of the power unit detected (p0600 = 11).
- Sensor type PT100 selected (p0601 = 5).
If the resistance in series with the PT100 (e.g. the cable resistance of the feeder cable) is known, the following conversion formula must be used:
Offset in p0624 = Measured resistance in ohms x 2.5 K/Ohm
Example:
Measured cable resistance = 2 Ohm
--> 2 Ohm x 2.5 K / Ohm = 5.0 K

**p0625[0...n]**

Motor ambient temperature / Mot T_ambient

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(3), U, T</th>
<th>Calculated: CALC_MOD_EQU</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: 8016</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: 21_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-40 [°C]</td>
<td>80 [°C]</td>
<td>20 [°C]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Defines the ambient temperature of the motor for calculating the motor temperature model.

**Note:**
The parameters for stator and rotor resistance (p0350, p0354) refer to this temperature.
If the thermal I2t motor model is activated for permanent-magnet synchronous motors (refer to p0611), p0625 is included in the model calculation if a temperature sensor is not being used (see p0601).
### List of parameters

#### p0626[0...n]
**Motor overtemperature, stator core / Mot T\_over core**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector label</td>
<td>VECTOR_G</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Motor</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>20 [K]</td>
<td>Defines the rated overtemperature of the stator core referred to the ambient temperature.</td>
</tr>
<tr>
<td>Max</td>
<td>200 [K]</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>50 [K]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Defines the rated overtemperature of the stator core referred to the ambient temperature.

**Dependency:**
For 1LA5 and 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

#### p0627[0...n]
**Motor overtemperature, stator winding / Mot T\_over stator**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector label</td>
<td>VECTOR_G</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Motor</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>20 [K]</td>
<td>Defines the rated overtemperature of the stator winding referred to the ambient temperature.</td>
</tr>
<tr>
<td>Max</td>
<td>200 [K]</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>80 [K]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Defines the rated overtemperature of the stator winding referred to the ambient temperature.

**Dependency:**
For 1LA5 and 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

#### p0628[0...n]
**Motor overtemperature rotor winding / Mot T\_over rotor**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector label</td>
<td>VECTOR_G</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Motor</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>20 [K]</td>
<td>Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature.</td>
</tr>
<tr>
<td>Max</td>
<td>200 [K]</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>100 [K]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Defines the rated overtemperature of the squirrel cage rotor referred to ambient temperature.

**Dependency:**
For 1LA5 and 1LA7 motors (refer to p0300), the parameter is pre-set as a function of p0307 and p0311.

**Note:**
When quick commissioning is exited with p3900 > 0, then the parameter is reset if a catalog motor has not been selected (refer to p0300).

#### r0630[0...n]
**Mot_temp\_mod ambient temperature / Mod T\_ambient**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector label</td>
<td>VECTOR_G</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Motor</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL, FEM</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
<td>Displays the ambient temperature of the motor temperature model.</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the ambient temperature of the motor temperature model.
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0631[0...n]</td>
<td><strong>Mot_temp_mod stator iron temperature / Mod T_stator</strong></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: MDS, p0130 Func. diagram: 8016</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Units group: 21_1 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: REL, FEM</td>
<td>Scaling: p2006 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [°C]</td>
<td>- [°C]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the stator core temperature of the motor temperature model.</td>
</tr>
</tbody>
</table>

| r0632[0...n] | **Mot_temp_mod stator winding temperature / Mod T_winding** |
| VECTOR_G | Can be changed: - Calculated: - Access level: 4 |
| Data type: FloatingPoint32 | Dynamic index: MDS, p0130 Func. diagram: 8016 |
| P-Group: Motor | Units group: 21_1 Unit selection: p0505 |
| Not for motor type: REL, FEM | Scaling: p2006 Expert list: 1 |
| Min | Max Factory setting |
| - [°C] | - [°C] |
| **Description:** | Displays the stator winding temperature of the motor temperature model. |

| r0633[0...n] | **Mot_temp_mod rotor temperature / Mod T_rotor** |
| VECTOR_G | Can be changed: - Calculated: - Access level: 4 |
| Data type: FloatingPoint32 | Dynamic index: MDS, p0130 Func. diagram: 8016 |
| P-Group: Motor | Units group: 21_1 Unit selection: p0505 |
| Not for motor type: REL, FEM | Scaling: p2006 Expert list: 1 |
| Min | Max Factory setting |
| - [°C] | - [°C] |
| **Description:** | Displays the rotor temperature of the motor temperature model. |
| **Note:** | For motor temperature model 3 (p0612.2 = 1), this parameter is not valid: |

| p0634[0...n] | **Q flux flux constant unsaturated / PSIQ KPSI UNSAT** |
| VECTOR_G | Can be changed: C2(3), U, T Calculated: - Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: MDS, p0130 Func. diagram: - |
| P-Group: Motor | Units group: - Unit selection: - |
| Not for motor type: ASM, FEM | Scaling: - Expert list: 1 |
| Min | Max Factory setting |
| 0.000 [Vsrms] | 100.000 [Vsrms] 0.000 [Vsrms] |
| **Description:** | The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. |
| | The parameter weights the unsaturated component of the quadrature axis flux function. |

| p0635[0...n] | **Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT** |
| VECTOR_G | Can be changed: C2(3), U, T Calculated: - Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: MDS, p0130 Func. diagram: - |
| P-Group: Motor | Units group: - Unit selection: - |
| Not for motor type: ASM, FEM | Scaling: - Expert list: 1 |
| Min | Max Factory setting |
| 0.00 [Arms] | 10000.00 [Arms] 0.00 [Arms] |
| **Description:** | The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. |
| | This parameter describes the interdependency of the unsaturated component of the quadrature axis current. |
| **Dependency:** | Refer to: p0634 |
List of parameters

**p0636[0...n]**  Q flux direct axis current constant unsaturated / PSIQ KID UNSAT

**VECTOR_G**

- **Can be changed:** C2(3), U, T
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** MDS, p0130
- **P-Group:** Motor
- **Units group:** -
- **Not for motor type:** ASM, FEM
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.00 [Arms]
- **Max:** 10000.00 [Arms]
- **Factory setting:** 0.00 [Arms]

**Description:**
The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. This parameter describes the interdependency of the unsaturated component of the direct axis current.

**Dependency:**
Refer to: p0634

**p0637[0...n]**  Q flux flux gradient saturated / PSIQ Grad SAT

**VECTOR_G**

- **Can be changed:** C2(3), U, T
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** MDS, p0130
- **P-Group:** Motor
- **Units group:** -
- **Not for motor type:** ASM, FEM
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.00 [mH]
- **Max:** 10000.00 [mH]
- **Factory setting:** 0.00 [mH]

**Description:**
The non-linear and cross-coupled quadrature axis flux functions are defined using 4 coefficients. This parameter describes the gradients of the saturated component over the quadrature axis current.

**Dependency:**
Refer to: p0634, p0635, p0636

**p0640[0...n]**  Current limit / Current limit

**VECTOR_G**

- **Can be changed:** C2(1, 3), U, T
- **Calculated:** CALC_MOD_ALL
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Motor
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.00 [Arms]
- **Max:** 10000.00 [Arms]
- **Factory setting:** 0.00 [Arms]

**Description:**
Sets the current limit.

**Dependency:**
Refer to: r0209, p0323

**Note:**
The parameter is part of the quick commissioning (p0010 = 1); this means that it is appropriately pre-assigned when changing p0305, p0323 and p0338.

The current limit p0640 is limited to r0209 and p0323. The limit to p0323 is not realized if a value of zero is entered there.

The resulting current limit is displayed in r0067 and if required, r0067 is reduced by the thermal model of the Motor Module.

The torque and power limits (p1520, p1521, p1530, p1531) matching the current limit are automatically calculated when exiting the quick commissioning using p3900 > 0 or using the automatic parameterization with p0340 = 3, 5.

For VECTOR the following applies (p0107):
p0640 is limited to 4.0 x p0305.
p0640 is pre-assigned for the automatic self commissioning routine (e.g. to 1.5 x p0305, with p0305 = r0207[1]).
p0640 must be entered when commissioning the system. This is the reason that p0640 is not calculated by the automatic parameterization when exiting the quick commissioning (p3900 > 0).
For SERVO the following applies (p0107):
p0640 is pre-assigned as follows using the automatic parameterization (p0340 = 1, p3900 > 0) taking into account the limits r0209 and r0323:
- for induction motors: p0640 = 1.5 x p0305
- for synchronous motors: p0640 = p0338
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0641[0...n]</td>
<td>CI: Current limit, variable / Curr lim var</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 6640</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source for the variable current limit.</td>
<td>The value is referred to p0640.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0643[0...n]</td>
<td>Overvoltage protection for synchronous motors / Overvolt_protect</td>
<td>Can be changed: C2(3)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the overvoltage protection for synchronous motors in the field-weakening range.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: No measure</td>
<td>1: Voltage Protection Module (VPM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refer to: p0316, p1082, p1231, p9601, p9801</td>
<td>Refer to: F07906, F07907</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notice:</td>
<td>When the speed limiting is removed, the user is responsible for implementing a suitable overvoltage protection.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>In the field-weakening range, synchronous motors can, when a fault condition exists, generate high DC link voltages. The following possibilities exist to protect the drive system from being destroyed due to overvoltage:</td>
<td>- limit the maximum speed (p1082) without any additional protection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>The maximum speed without protection is calculated as follows:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rotary motors: p1082 [rpm] &lt;= 11.695 * r0297/p0316 [Nm/A]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Linear motors: p1082 [m/min] &lt;= 73.484 * r0297/0316 [N/A]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- use a Voltage Protection Module (VPM) in conjunction with the function &quot;Safe Torque Off&quot; (p9601, p9801).</td>
<td>When a fault condition exists, the VPM short-circuits the motors. During the short-circuit, the pulses must be suppressed - this means that the terminals for the function &quot;Safe Torque Off&quot; must be connected to the VPM.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- activating the internal voltage protection (IVP) with p1231 = 3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0650[0...n]</td>
<td>Actual motor operating hours / Mot t_oper act</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 [h]</td>
<td>4294967295 [h]</td>
<td>0 [h]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Displays the operating hours for the corresponding motor.</td>
<td>The motor operating time counter continues to run when the pulses are enabled. When the pulse enable is withdrawn, the counter is held and the value saved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>The following prerequisites must be fulfilled in order to be able to save the operating hours counter in a non-volatile fashion:</td>
<td>- firmware with V2.2 or higher.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: p0651</td>
<td>Refer to: A01590</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The operating hours counter in p0650 can only be reset to 0.</td>
<td>The operating hours counter only runs with motor data set 0 and 1 (MDS).</td>
<td></td>
<td></td>
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</tbody>
</table>
**p0651[0...n]**  
**Motor operating hours maintenance interval / Mot t_{op maint}**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0 [h]</td>
<td>Max</td>
<td>150000 [h]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the service/maintenance intervals in hours for the appropriate motor. An appropriate fault is output when the operating hours set here are reached.

**Dependency:**
Refer to: p0650  
Refer to: A01590

**Note:**
For p0651 = 0, the operating hours counter is disabled.  
When setting p0651 to 0, then p0650 is automatically set to 0. The operating hours counter only runs with motor data set 0 and 1 (MDS).

**p0652[0...n]**  
**Motor stator resistance, scaling / Mot R_{stator scal}**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>C2(3), U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_EQU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>10.0 [%]</td>
<td>Max</td>
<td>300.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the factor to evaluate the stator resistance.

**Dependency:**
Refer to: p0350, r0370

**p0653[0...n]**  
**Motor stator leakage inductance, scaling / Mot L_{S leak scal}**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>C2(3), U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_EQU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>10.0 [%]</td>
<td>Max</td>
<td>300.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the factor to evaluate the stator leakage induction.

**Dependency:**
Refer to: p0356, r0377

**p0655[0...n]**  
**Motor magnetizing inductance, d axis saturated scaling / Mot L_{m d sat scal}**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>C2(3), U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_EQU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>10.0 [%]</td>
<td>Max</td>
<td>300.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Factor to evaluate the magnetizing inductance in the direction of the rotor axis (d axis).

**Dependency:**
Refer to: p0360, r0382
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0656[0...n]</td>
<td>Motor magnetizing inductance, q axis, saturated scaling / Mot L_m q sat scal</td>
<td>VECTOR_G</td>
<td>FloatingPoint32</td>
<td>Motor</td>
<td>ASM, PEM, REL</td>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>100.0 [%]</td>
</tr>
<tr>
<td>p0657[0...n]</td>
<td>Motor damping inductance, d axis scaling / Mot L_damp d scal</td>
<td>VECTOR_G</td>
<td>FloatingPoint32</td>
<td>Motor</td>
<td>ASM, PEM, REL</td>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>100.0 [%]</td>
</tr>
<tr>
<td>p0658[0...n]</td>
<td>Motor damping inductance, q axis scaling / Mot L_damp q scal</td>
<td>VECTOR_G</td>
<td>FloatingPoint32</td>
<td>Motor</td>
<td>ASM, PEM, REL</td>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>100.0 [%]</td>
</tr>
<tr>
<td>p0659[0...n]</td>
<td>Motor damping resistance, d axis scaling / Mot R_damp d scal</td>
<td>VECTOR_G</td>
<td>FloatingPoint32</td>
<td>Motor</td>
<td>ASM, PEM, REL</td>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>100.0 [%]</td>
</tr>
<tr>
<td>p0660[0...n]</td>
<td>Motor damping resistance, q axis scaling / Mot R_damp q scal</td>
<td>VECTOR_G</td>
<td>FloatingPoint32</td>
<td>Motor</td>
<td>ASM, PEM, REL</td>
<td>10.0 [%]</td>
<td>300.0 [%]</td>
<td>100.0 [%]</td>
</tr>
</tbody>
</table>
### List of parameters

#### p0680[0...7] Central measuring probe, input terminal / Cen meas inp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong> <strong>CU_G130_PN,</strong> <strong>CU_G150_DP,</strong> <strong>CU_G150_PN</strong></td>
<td>Can be changed: U, T</td>
<td>Can be changed: U, T</td>
<td>Refer to: p0728</td>
<td>To the terminal designation: The first designation is valid for CU320, the second for CU310. To select the values: For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).</td>
</tr>
<tr>
<td><strong>p0680[0]</strong></td>
<td>Digital input, measuring probe 1</td>
<td>0: No meas probe</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[1]</strong></td>
<td>Digital input, measuring probe 2</td>
<td>1: DI/DO 9 (X122.10/X121.8)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[2]</strong></td>
<td>Digital input, measuring probe 3</td>
<td>2: DI/DO 10 (X122.12/X121.10)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[3]</strong></td>
<td>Digital input, measuring probe 4</td>
<td>3: DI/DO 11 (X122.13/X121.11)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[4]</strong></td>
<td>Digital input, measuring probe 5</td>
<td>4: DI/DO 13 (X132.10/X131.2)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[5]</strong></td>
<td>Digital input, measuring probe 6</td>
<td>5: DI/DO 14 (X132.12/X131.4)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[6]</strong></td>
<td>Digital input, measuring probe 7</td>
<td>6: DI/DO 15 (X132.13/X131.5)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>p0680[7]</strong></td>
<td>Digital input, measuring probe 8</td>
<td>7: DI/DO 8 (X122.9/X121.7)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p0681 BI: Central measuring probe, synchronizing signal signal source / Cen meas sync_sig

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong> <strong>CU_G130_PN,</strong> <strong>CU_G150_DP,</strong> <strong>CU_G150_PN</strong></td>
<td>Can be changed: T</td>
<td>Can be changed: U, T</td>
<td>Refer to: p0728</td>
<td>To the terminal designation: The first designation is valid for CU320, the second for CU310. To select the values: For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).</td>
</tr>
<tr>
<td><strong>p0681</strong></td>
<td>Remote synchronizing signal</td>
<td>0:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p0682 CI: Central measuring probe, control word signal source / Cen meas STW S_src

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong> <strong>CU_G130_PN,</strong> <strong>CU_G150_DP,</strong> <strong>CU_G150_PN</strong></td>
<td>Can be changed: T</td>
<td>Can be changed: T</td>
<td>Refer to: p0728</td>
<td>To the terminal designation: The first designation is valid for CU320, the second for CU310. To select the values: For Cx32, NX10 and NX15, only DI/DO 8, 9, 10, 11 can be selected as fast inputs (refer to the Equipment Manual).</td>
</tr>
<tr>
<td><strong>p0682</strong></td>
<td>Remote control word signal</td>
<td>0:</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### p0684 Central measuring probe evaluation technique / Cen meas eval_tech

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0684</td>
<td>Sets the evaluation technique for the &quot;central measuring probe evaluation&quot; function.</td>
<td>0: Measurement with handshake</td>
<td>This evaluation procedure is only activated after parameter save and POWER ON.</td>
<td>During measurement without a handshake, the probe may have a higher evaluation frequency. The setting &quot;Measurement without handshake&quot; must be supported by the higher-level control. This setting cannot be used for SIMOTION D with integrated SINAMICS or with CX32.</td>
</tr>
<tr>
<td>p0684</td>
<td>Changing this evaluation procedure to p0684 = 0 is possible in the RUN state.</td>
<td>1: Measurement without handshake, 2 edges</td>
<td>Changing this evaluation procedure to p0684 = 16 is only activated after parameter save and POWER ON.</td>
<td>Changing this evaluation procedure to p0684 = 16 is only activated after parameter save and POWER ON.</td>
</tr>
<tr>
<td>p0684</td>
<td>Measurement without handshake, more than 2 edges</td>
<td>16: Measurement without handshake, more than 2 edges</td>
<td></td>
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</tr>
</tbody>
</table>

### r0685 Central measuring probe, control word display / Cen meas STW disp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>r0685</td>
<td>Displays the control word for the function &quot;central measuring probe evaluation&quot;.</td>
<td>Bit</td>
<td>Signal name</td>
</tr>
<tr>
<td>r0685</td>
<td></td>
<td>0 signal</td>
<td>1 signal</td>
</tr>
<tr>
<td>r0685</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>r0685</td>
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<td>No</td>
</tr>
<tr>
<td>r0685</td>
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<tr>
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<td>r0685</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>r0685</td>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
**List of parameters**

**r0686[0...7]**  
**CO: Central measuring probe, measuring time rising edge / CenMeas t_meas 0/1**

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Expert list:** 1

**Description:**
Displays the measuring time for a rising edge at the digital input for the "central measuring probe evaluation" function.

The measuring time is specified as a 16-bit value with a resolution of 0.25 µs.

- r0686[0]: Measuring time, rising edge measuring probe 1
- r0686[1]: Measuring time, rising edge measuring probe 2
- r0686[2]: Measuring time, rising edge measuring probe 3
- r0686[3]: Measuring time, rising edge measuring probe 4
- r0686[4]: Measuring time, rising edge measuring probe 5
- r0686[5]: Measuring time, rising edge measuring probe 6
- r0686[6]: Measuring time, rising edge measuring probe 7
- r0686[7]: Measuring time, rising edge measuring probe 8

**Note:**
The parameter is only active for the evaluation procedure p0684 = 0, 1. For p0684 = 16, r0686[0...7] = 0 is displayed.

**r0687[0...7]**  
**CO: Central measuring probe, measuring time falling edge / CenMeas t_meas 1/0**

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Displays the measuring time for a falling edge at the digital input for the "central measuring probe evaluation" function.

The measuring time is specified as a 16-bit value with a resolution of 0.25 µs.

- r0687[0]: Measuring time, falling edge measuring probe 1
- r0687[1]: Measuring time, falling edge measuring probe 2
- r0687[2]: Measuring time, falling edge measuring probe 3
- r0687[3]: Measuring time, falling edge measuring probe 4
- r0687[4]: Measuring time, falling edge measuring probe 5
- r0687[5]: Measuring time, falling edge measuring probe 6
- r0687[6]: Measuring time, falling edge measuring probe 7
- r0687[7]: Measuring time, falling edge measuring probe 8

**Note:**
The parameter is only active for the evaluation procedure p0684 = 0, 1. For p0684 = 16, r0687[0...7] = 0 is displayed.

**r0688**  
**CO: Central measuring probe, status word display / Cen meas ZSW disp**

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Displays the status word for the function "central measuring probe evaluation".
List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Digital input, measuring probe 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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<tr>
<td>01</td>
<td>01</td>
<td>Digital input, measuring probe 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Digital input, measuring probe 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>Digital input, measuring probe 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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<tr>
<td>04</td>
<td>04</td>
<td>Digital input, measuring probe 5</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Digital input, measuring probe 6</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>06</td>
<td>Digital input, measuring probe 7</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>07</td>
<td>Digital input, measuring probe 8</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>08</td>
<td>Sub-sampling, measuring probe 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>09</td>
<td>Sub-sampling, measuring probe 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Sub-sampling, measuring probe 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Sub-sampling, measuring probe 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Sub-sampling, measuring probe 5</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Sub-sampling, measuring probe 6</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Sub-sampling, measuring probe 7</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Sub-sampling, measuring probe 8</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Runs the corresponding macro files.

The binector inputs of the corresponding command data set are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:
p0700 = 6 --> macro file PM000006.ACX is run.

**Dependency:**
Refer to: p0015, p1000, p1500, r8571

**Caution:**
When executing a specific macro, the corresponding programmed settings are made and become active.

**Notice:**
No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

**Note:**
The macros in the specified directory are displayed in r8571. r8571 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

BI: Binector Input

CDS: Command Data Set

---

**p0700[0...n] Macro Binector Input (BI) / Macro BI**

B_INF, VECTOR_G

Can be changed: C2(1), T

Calculated: -

Access level: 1

Data type: Unsigned32

Dynamic index: CDS, p0170

Func. diagram: -

P-Group: Commands

Units group: -

Unit selection: -

Not for motor type: -

Scaling: -

Expert list: 1

Min

Max

999999

0

**Description:**
Runs the corresponding macro files.

The binector inputs of the corresponding command data set are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:
p0700 = 6 --> macro file PM000006.ACX is run.

**Dependency:**
Refer to: p0015, p1000, p1500, r8571

**Caution:**
When executing a specific macro, the corresponding programmed settings are made and become active.

**Notice:**
No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

**Note:**
The macros in the specified directory are displayed in r8571. r8571 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

BI: Binector Input

CDS: Command Data Set

---

**p0700 Macro Binector Input (BI) for TMs / Macro BI TM**

TB30, TM31

Can be changed: C2(1), T

Calculated: -

Access level: 1

Data type: Unsigned32

Dynamic index: -

Func. diagram: -

P-Group: Commands

Units group: -

Unit selection: -

Not for motor type: -

Scaling: -

Expert list: 1

Min

Max

999999

0

**Description:**
Runs the corresponding macro files.

The selected macro file must be available on the memory card/device memory.

Example:
p0700 = 6 --> macro file PM000006.ACX is run.

**Dependency:**
Refer to: r8571

**Caution:**
When executing a specific macro, the corresponding programmed settings are made and become active.

**Notice:**
No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!
Note: The macros in the specified directory are displayed in r8571. r8571 is not in the expert list of the commissioning software.
Macros available as standard are described in the technical documentation of the particular product.

BI: Binector Input
CDS: Command Data Set

---

**r0721**

**CU digital inputs, terminal actual value / CU DI actual value**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Unsigned32</td>
<td>-</td>
<td>2</td>
<td>Displays the actual value at the digital inputs. This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p0795.x = 1) to terminal mode (p0795.x = 0).</td>
</tr>
</tbody>
</table>

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X122.1/X121.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X122.2/X121.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X122.3/X121.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X122.4/X121.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X132.1 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X132.2 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X132.3 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X132.4 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI 16 (X122.5/X120.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI 17 (X122.6/X120.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI 20 (X132.5/X120.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI 21 (X132.6/X120.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**

To the terminal designation:
The first designation is valid for CU320, the second for CU310.

**Note:**

If a DI/DO is parameterized as output (p0728.x = 1), then r0721.x = 0 is displayed.

DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

---

**r0722.0...21**

**CO/BO: CU digital inputs, status / CU DI status**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
</table>

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X122.1/X121.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X122.2/X121.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X122.3/X121.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X122.4/X121.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X132.1 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X132.2 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X132.3 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X132.4 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI 16 (X122.5/X120.3)</td>
<td>High</td>
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<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI 17 (X122.6/X120.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI 20 (X132.5/X120.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI 21 (X132.6/X120.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0</td>
<td>(X122.1/X121.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1</td>
<td>(X122.2/X121.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2</td>
<td>(X122.3/X121.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3</td>
<td>(X122.4/X121.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4</td>
<td>(X132.1 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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<td>DI 5</td>
<td>(X132.2 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6</td>
<td>(X132.3 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7</td>
<td>(X132.4 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8</td>
<td>(X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9</td>
<td>(X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10</td>
<td>(X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11</td>
<td>(X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12</td>
<td>(X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13</td>
<td>(X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14</td>
<td>(X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15</td>
<td>(X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI 16</td>
<td>(X122.5/X120.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI 17</td>
<td>(X122.6/X120.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI 20</td>
<td>(X132.5/X120.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI 21</td>
<td>(X132.6/X120.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0723

**Notice:** To the terminal designation:

The first designation is valid for CU320, the second for CU310.

**Note:**

- DI: Digital Input
- DI/DO: Bidirectional Digital Input/Output

---

**r0723.0...21 CO/BO: CU digital inputs, status inverted / CU DI status inv**

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN

- Can be changed: -
- Calculated: -
- Access level: 1
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: 1510, 2020, 2030, 2031, 2100, 2120, 2130, 2131, 2132, 2133
- P-Group: Commands
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1

**Description:** Displays the inverted status of the digital inputs.

<table>
<thead>
<tr>
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<th>Bit</th>
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<th>0 signal</th>
<th>FP</th>
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<tr>
<td>00</td>
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<td>(X122.1/X121.1)</td>
<td>High</td>
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<td>01</td>
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<td>(X122.2/X121.2)</td>
<td>High</td>
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</tr>
<tr>
<td>02</td>
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<td>(X122.3/X121.3)</td>
<td>High</td>
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<td>DI 3</td>
<td>(X122.4/X121.4)</td>
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</tr>
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<td>(X132.1 / -)</td>
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<td>Low</td>
<td>-</td>
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<td>(X132.2 / -)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
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<td>(X132.3 / -)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
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<td>07</td>
<td>DI 7</td>
<td>(X132.4 / -)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
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<td>(X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9</td>
<td>(X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
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<td>DI/DO 10</td>
<td>(X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11</td>
<td>(X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12</td>
<td>(X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13</td>
<td>(X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14</td>
<td>(X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15</td>
<td>(X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI 16</td>
<td>(X122.5/X120.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI 17</td>
<td>(X122.6/X120.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI 20</td>
<td>(X132.5/X120.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI 21</td>
<td>(X132.6/X120.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0722
Notice: To the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

p0728  
CU, set input or output / CU DI or DO

Can be changed: T  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: 1510, 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min - Max - Factory setting 0000 0000 0000 0000 bin

Description: Sets the bidirectional digital inputs/outputs as an input or output.

Bit field:

| Bit | Signal name   | 1 signal | 0 signal | Bit 
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>Output</td>
<td>Input</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>Output</td>
<td>Input</td>
</tr>
</tbody>
</table>

Notice: To the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: DI/DO: Bidirectional Digital Input/Output

r0729  
CU digital outputs access authority / CU DO acc_auth

Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dynamic index: -  Func. diagram: 2030, 2031, 2130, 2131, 2132, 2133
P-Group: Commands  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min - Max - Factory setting -

Description: Displays the access authority at the digital outputs.

Bit = 1:
The control has access authority to the digital output via PROFIBUS or direct access.

Bit = 0:
The drive has access authority to the digital output or the digital input/output is not set as digital output or is not available.

Bit field:

| Bit | Signal name   | 1 signal | 0 signal | FP 
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
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<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p0728, p0738, p0739, p0740, p0741, p0742, p0743, p0744, p0745, r0747, p0748

Notice: To the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note: The DI/DO must be connected as output (p0728);
DI/DO: Bidirectional Digital Input/Output
### p0738 BI: CU, signal source for terminal DI/DO 8 / CU S_src DI/DO 8

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Commands
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for terminal DI/DO 8 (X122.9 / X121.7).

**Notice:**
The first designation is valid for CU320, the second for CU310.

**Note:**
Prerequisite: The DI/DO must be set as an output (p0728.8 = 1).

**DI/DO:** Bidirectional Digital Input/Output

### p0739 BI: CU, signal source for terminal DI/DO 9 / CU S_src DI/DO 9

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Commands
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for terminal DI/DO 9 (X122.10 / X121.8).

**Notice:**
The first designation is valid for CU320, the second for CU310.

**Note:**
Prerequisite: The DI/DO must be set as an output (p0728.9 = 1).

**DI/DO:** Bidirectional Digital Input/Output

### p0740 BI: CU, signal source for terminal DI/DO 10 / CU S_src DI/DO 10

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Commands
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for terminal DI/DO 10 (X122.12 / X121.10).

**Notice:**
The first designation is valid for CU320, the second for CU310.

**Note:**
Prerequisite: The DI/DO must be set as an output (p0728.10 = 1).

**DI/DO:** Bidirectional Digital Input/Output

### p0741 BI: CU, signal source for terminal DI/DO 11 / CU S_src DI/DO 11

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Commands
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for terminal DI/DO 11 (X122.13 / X121.11).
### p0742 BI: CU, signal source for terminal DI/DO 12 / CU S_src DI/DO 12

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Sets the signal source for terminal DI/DO 12 (X132.9 / X131.1).</td>
<td>1</td>
<td>Commands</td>
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<td>1</td>
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<td>Dynamic index:</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td></td>
<td></td>
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<tr>
<td>Calculated:</td>
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<td>P-Group:</td>
<td>Commands</td>
<td></td>
<td></td>
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</tr>
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<td>Scaling:</td>
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<tr>
<td>Notice:</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
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<tr>
<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p0728.11 = 1).</td>
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<tr>
<td>DI/DO: Bidirectional Digital Input/Output</td>
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</tbody>
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### p0743 BI: CU, signal source for terminal DI/DO 13 / CU S_src DI/DO 13

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
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<tbody>
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<td>Sets the signal source for terminal DI/DO 13 (X132.10 / X131.2).</td>
<td>1</td>
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<td></td>
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</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td></td>
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<tr>
<td>Calculated:</td>
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<td>P-Group:</td>
<td>Commands</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
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<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
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<td>Data type:</td>
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<tr>
<td>Scaling:</td>
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<tr>
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<td></td>
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<tr>
<td>Notice:</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
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<tr>
<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p0728.12 = 1).</td>
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<tr>
<td>DI/DO: Bidirectional Digital Input/Output</td>
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</table>

### p0744 BI: CU, signal source for terminal DI/DO 14 / CU S_src DI/DO 14

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
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</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
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<td></td>
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<tr>
<td>Calculated:</td>
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<td>P-Group:</td>
<td>Commands</td>
<td></td>
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<tr>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
<td>-</td>
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</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td></td>
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<td>Scaling:</td>
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<td></td>
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<tr>
<td>Notice:</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
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</tr>
<tr>
<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p0728.14 = 1).</td>
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</tr>
<tr>
<td>DI/DO: Bidirectional Digital Input/Output</td>
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</tbody>
</table>
### Parameters

#### List of parameters

**p0745**  
**BI: CU, signal source for terminal DI/DO 15 / CU S_src DI/DO 15**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Commands</td>
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<td>Not for motor type:</td>
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<td></td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for terminal DI/DO 15 (X132.13 / X131.5You).

**Notice:**
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

**Note:**
Prerequisite: The DI/DO must be set as an output (p0728.15 = 1).

**Di/DO:** Bidirectional Digital Input/Output

**r0747**  
**CU, digital outputs status / CU DO status**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
<td>Unsigned32</td>
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<td>1</td>
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<tr>
<td>P-Group: Commands</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<td>Not for motor type:</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the status of digital outputs.

**Note:**
Inversion using p0748 has been taken into account.

**Di/DO:** Bidirectional Digital Input/Output

**p0748**  
**CU, invert digital outputs / CU DO inv**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Commands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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</tr>
</tbody>
</table>

**Description:**
Setting to invert the signals at the digital outputs.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notice:**
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

**Note:**
Inversion using p0748 has been taken into account.

**Di/DO:** Bidirectional Digital Input/Output
List of parameters

Notice:
If telegram 39x is set via p0922 in SINAMICS Integrated, the inversion of the output has no effect.
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

Note:
DI/DO: Bidirectional Digital Input/Output

---

**p0771[0...2]**

<table>
<thead>
<tr>
<th>p0771</th>
<th>Test sockets signal source / Test skt S_src</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for the signal to be output at the test sockets.

Index:
- [0] = T0
- [1] = T1
- [2] = T2

Dependency:
Can only be set when p0776 = 99.
Refer to: r0772, r0774, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786

---

**r0772[0...2]**

<table>
<thead>
<tr>
<th>r0772</th>
<th>Test sockets output signal / TestSktsSignalVal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

Description: Displays the actual value of the signal to be output.

Index:
- [0] = T0
- [1] = T1
- [2] = T2

Dependency:
Refer to: p0771, r0774, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786

---

**r0774[0...2]**

<table>
<thead>
<tr>
<th>r0774</th>
<th>Test sockets output voltage / TestSkts U_output</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [V]</td>
</tr>
</tbody>
</table>

Description: Displays the actual output voltage for the test sockets.

Index:
- [0] = T0
- [1] = T1
- [2] = T2

Dependency:
Refer to: p0771, r0772, p0776, p0777, p0778, p0779, p0780, p0783, p0784, r0786
### List of parameters

#### p0776[0...2] Test socket mode / Test skt mode
- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
  - **Can be changed**: U, T
  - **Data type**: Integer16
  - **P-Group**: Terminals
  - **Not for motor type**: -
  - **Min**: 96
  - **Max**: 99

**Description:**
Sets the mode for the test sockets.

**Value:**
- 96: Physical address (32-bit integer signal unsigned)
- 97: Physical address (32-bit integer signal)
- 98: Physical address (32-bit floating-point signal)
- 99: BICO signal

**Index:**
- [0] = T0
- [1] = T1
- [2] = T2

**Dependency:**
Refer to: p0771, r0772, r0774, p0777, p0779, p0780, p0783, p0784, r0786, p0788, p0789, r0790

#### p0777[0...2] Test socket characteristic value x1 / Test skt char x1
- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
  - **Can be changed**: U, T
  - **Data type**: FloatingPoint32
  - **P-Group**: Terminals
  - **Not for motor type**: -
  - **Min**: -100000.00 [%]
  - **Max**: 100000.00 [%]

**Description:**
The scaling characteristic for the test sockets is defined using two points. This parameter specifies the x coordinate (percentage) of the first point on the characteristic.

**Index:**
- [0] = T0
- [1] = T1
- [2] = T2

**Dependency:**
Can only be set when p0776 = 99.

Refer to: p0778, p0779, p0780, r0786

**Note:**
The value 0.00 % corresponds to 2.49 V.

#### p0778[0...2] Test socket characteristic value y1 / Test skt char y1
- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
  - **Can be changed**: U, T
  - **Data type**: FloatingPoint32
  - **P-Group**: Terminals
  - **Not for motor type**: -
  - **Min**: 0.00 [V]
  - **Max**: 4.98 [V]

**Description:**
The scaling characteristic for the test sockets is defined using two points. This parameter specifies the y coordinate (output voltage) of the first point on the characteristic.

**Index:**
- [0] = T0
- [1] = T1
- [2] = T2

**Dependency:**
Can only be set when p0776 = 99.

Refer to: p0777, p0779, p0780, r0786
### p0779[0...2] Test socket characteristic value x2 / Test skt char x2

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T  
- **Data type:** FloatingPoint32  
- **P-Group:** Terminals  
- **Not for motor type:** -  
- **Min:** -100000.00 [%]  
- **Max:** 427.9E9 [%]

**Description:**
The scaling characteristic for the test sockets is defined using two points. This parameter specifies the x coordinate (percentage) of the second point on the characteristic.

**Index:**
[0] = T0  
[1] = T1  
[2] = T2

**Dependency:**
Can only be set when p0776 = 99.

**Note:**
The value 100.00 % corresponds to 4.98 V.

### p0780[0...2] Test socket characteristic value y2 / Test skt char y2

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T  
- **Data type:** FloatingPoint32  
- **P-Group:** Terminals  
- **Not for motor type:** -  
- **Min:** 0.00 [V]  
- **Max:** 4.98 [V]

**Description:**
The scaling characteristic for the test sockets is defined using two points. This parameter specifies the y coordinate (output voltage) of the second point on the characteristic.

**Index:**
[0] = T0  
[1] = T1  
[2] = T2

**Dependency:**
Can only be set when p0776 = 99.

**Note:**
Refer to: p0777, p0778, p0780, r0786

### p0783[0...2] Test sockets offset / Test skt offset

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T  
- **Data type:** FloatingPoint32  
- **P-Group:** Terminals  
- **Not for motor type:** -  
- **Min:** -4.98 [V]  
- **Max:** 4.98 [V]

**Description:**
Sets an additional offset for the test sockets.

**Index:**
[0] = T0  
[1] = T1  
[2] = T2

### p0784[0...2] Test socket limit on/off / TestSktLim on/off

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T  
- **Data type:** Integer16  
- **P-Group:** Terminals  
- **Not for motor type:** -  
- **Min:** 0  
- **Max:** 1

**Description:**
Sets the limit for a signal to be output via test sockets.

**Value:**
0: Limiting off  
1: Limiting on
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Access level:</th>
<th>P-Group:</th>
<th>Units group:</th>
<th>Unit selection:</th>
<th>Expert list:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>U, T</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>4</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0000 bin</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
- Limiting on:
  - If signals are output outside the permissible measuring range, the signal is limited to 4.98 V or to 0 V.
- Limiting off:
  - If signals are output outside the permissible measuring range, this causes signal overflow. In the case of signal overflow, the signal jumps from 0 V to 4.98 V or from 4.98 V to 0 V.

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Access level:</th>
<th>P-Group:</th>
<th>Units group:</th>
<th>Unit selection:</th>
<th>Expert list:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>U, T</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>4</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0000 bin</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>4</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0000 bin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Access level:</th>
<th>P-Group:</th>
<th>Units group:</th>
<th>Unit selection:</th>
<th>Expert list:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>U, T</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>4</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0000 bin</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td>-</td>
<td>Signed16</td>
<td>-</td>
<td>4</td>
<td>Terminals</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0771, r0772, r0774, p0777, p0779, p0780, p0783, p0784

**Note:**
- Example:
  - Value of r0786[0] = 1500.0 and the measuring signal is r0063 (CO: Actual speed smoothed [rpm]).
  - A change of 1 V at the output of test socket T0 corresponds to 1500.0 [rpm].

**Dependency:**
- Changes only become effective if p0776 does not equal 99.
- Refer to: p0789, r0790

**Dependency:**
- Changes only become effective if p0776 does not equal 99.
- Refer to: p0789, r0790

**Dependency:**
- Changes only become effective if p0776 does not equal 99.
- Refer to: p0789, r0790

**Dependency:**
- Changes only become effective if p0776 does not equal 99.
- Refer to: p0789, r0790

**Dependency:**
- Changes only become effective if p0776 does not equal 99.
- Refer to: p0789, r0790
Dependency: Changes only become effective if p0776 does not equal 99.
Refer to: p0788

### r0790[0...2]

**Test sockets physical address signal value / TestSktsPhyAddrVal**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:**
- **Data type:** Unsigned32
- **P-Group:** Terminals

**Dependency:**
Displays the actual value of a signal determined via a physical address.

**Description:**
Displays the actual value of a signal determined via a physical address.

**Index:**
- [0] = T0
- [1] = T1
- [2] = T2

**Dependency:**
Only effective when p0776 = 97 or p0776 = 96.
Refer to: p0788

### p0795

**CU digital inputs simulation mode / CU DI simulation**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** Commands

**Dependency:**
Sets the simulation mode for digital inputs.

**Description:**
Sets the simulation mode for digital inputs.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X122.1/X121.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X122.2/X121.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X122.3/X121.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X122.4/X121.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X132.1 / -)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X132.2 / -)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X132.3 / -)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X132.4 / -)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Di/DO 8 (X122.9/X121.7)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Di/DO 9 (X122.10/X121.8)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Di/DO 10 (X122.12/X121.10)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Di/DO 11 (X122.13/X121.11)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Di/DO 12 (X132.9/X131.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Di/DO 13 (X132.10/X131.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Di/DO 14 (X132.12/X131.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Di/DO 15 (X132.13/X131.5)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Di 16 (X122.5/X120.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Di 17 (X122.6/X120.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Di 20 (X132.5/X120.9)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Di 21 (X132.6/X120.10)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
The setpoint for the input signals is specified using p0796.
Refer to: p0796, p9620

**Notice:**
If a digital input is used as signal source for the function "STO" (BI: p9620) then it is not permissible to select the simulation mode and this is rejected.

To the terminal designation:
The first designation stands for CU320, the second for CU310.
**Parameters**

**List of parameters**

**Note:**
This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

---

**p0796**  
CU digital inputs simulation mode setpoint / CU DI sim ul setp

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Func. diagram: 1510, 2020, 2030, 2031, 2100, 2120, 2130, 2131, 2132, 2133</td>
</tr>
<tr>
<td>P-Group: Commands</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 0000 0000 0000 0000</td>
</tr>
<tr>
<td>0000 0000 0000 bin</td>
</tr>
</tbody>
</table>

**Description:**
Sets the setpoint for the input signals in the digital input simulation mode.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X122.1/X121.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X122.2/X121.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X122.3/X121.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X122.4/X121.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X132.1/-)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X132.2/-)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X132.3/-)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X132.4/-)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X122.9/X121.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X122.10/X121.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X122.12/X121.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X122.13/X121.11)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X132.9/X131.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X132.10/X131.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X132.12/X131.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X132.13/X131.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI 16 (X122.5/X120.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI 17 (X122.6/X120.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI 20 (X132.5/X120.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI 21 (X132.6/X120.10)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
The simulation of a digital input is selected using p0795.

Refer to: p0795

**Notice:**
To the terminal designation:
The first designation is valid for CU320, the second for CU310.

**Note:**
This parameter is not saved when data is backed-up (p0971, p0977).

DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

---

**p0799[0...2]**  
CU inputs/outputs, sampling time / CU I/O t_sampl

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C1(3)</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Func. diagram: 2020, 2030, 2031</td>
</tr>
<tr>
<td>P-Group: Commands</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0.00 [µs]</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>4000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the sampling time for the inputs and outputs of the Control Unit.

**Index:**

[0] = Digital inputs/outputs (DI/DO)
[1] = Not available - analog inputs (AI)
[2] = Not available - analog outputs (AO)
### Dependency:  The parameter can only be modified for p0009 = 3, 29.

Refer to: p0009

### Note:  The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).

#### p0806  BL: Inhibit master control / PcCtrl inhibit

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32 / Binary</th>
<th>Dynamic index:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Commands</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list:</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  Sets the signal source to block the master control.

**Dependency:**  Refer to: r0807

**Note:**  The commissioning software (drive control panel) uses the master control, for example.

#### r0807.0  BO: Master control active / PcCtrl active

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned8</th>
<th>Dynamic index:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list:</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  Displays what has the master control.

The drive can be controlled via the BICO interconnection or from external (e.g. the commissioning software).

**Dependency:**  Refer to: p0806

**Notice:**  The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

**Note:**  Bit 0 = 0: BICO interconnection active  
Bit 0 = 1: Master control for PC/AOP  
The commissioning software (drive control panel) uses the master control, for example.

#### p0809[0...2]  Copy Command Data Set CDS / Copy CDS

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned8</th>
<th>Dynamic index:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Commands</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list:</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  Copies one Command Data Set (CDS) into another.

**Index:**  
[0] = Source Command Data Set  
[1] = Target Command Data Set  
[2] = Start copying procedure

**Note:**  
1. In Index 0, enter which command data set should be copied.  
2. In Index 1, enter the command data set that is to be copied into.  
3. Start copying: Set index 2 from 0 to 1.  
p0809[2] is automatically set to 0 when copying is completed.
Parameters

List of parameters

---

**p0810**

BI: Command data set selection CDS bit 0 / CDS select., bit 0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0810</td>
<td>Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).</td>
<td>Refers to: r0050, p0811, r0836</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
<td>The Command Data Set selected using the binector inputs is displayed in r0836. The currently effective command data set is displayed in r0050. A Command Data Set can be copied using p0809.</td>
</tr>
</tbody>
</table>

**p0811**

BI: Command data set selection CDS bit 1 / CDS select., bit 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0811</td>
<td>Sets the signal source to select the Command Data Set bit 1 (CDS bit 1).</td>
<td>Refers to: r0050, p0810, r0836</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
<td>The Command Data Set selected using the binector inputs is displayed in r0836. The currently effective command data set is displayed in r0050. A Command Data Set can be copied using p0809.</td>
</tr>
</tbody>
</table>

**p0819[0...2]**

Copy Drive Data Set DDS / Copy DDS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0819[0...2]</td>
<td>Copies one Drive Data Set (DDS) into another.</td>
<td>[0] = Source Drive Data Set [1] = Target Drive Data Set [2] = Start copying procedure</td>
<td>Procedure: 1. In Index 0, enter which drive data set is to be copied. 2. In Index 1, enter the drive data set data that is to be copied into. 3. Start copying: Set index 2 from 0 to 1. p0819[2] is automatically set to 0 when copying is completed.</td>
</tr>
</tbody>
</table>

**p0820[0...n]**

BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0

| Parameter          | Description                                                                 | | |
|--------------------|-----------------------------------------------------------------------------| | |
| p0820[0...n]       | Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).    | | |

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Dependency: Refer to: r0051, r0837
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0821[0...n]**  
BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1  
VECTOR_G  
Can be changed: C2(15), T  
Data type: Unsigned32 / Binary  
P-Group: Data sets  
Not for motor type: -  
Min -  
Max -  
Calculated: -  
Dynamic index: CDS, p0170  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting 0  
Access level: 3  
Func. diagram: 8565  

Description: Sets the signal source to select the Drive Data Set, bit 1 (DDS, bit 1).  
Dependency: Refer to: r0051, r0837  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0822[0...n]**  
BI: Drive Data Set selection DDS bit 2 / DDS select., bit 2  
VECTOR_G  
Can be changed: C2(15), T  
Data type: Unsigned32 / Binary  
P-Group: Data sets  
Not for motor type: -  
Min -  
Max -  
Calculated: -  
Dynamic index: CDS, p0170  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting 0  
Access level: 3  
Func. diagram: 8565  

Description: Sets the signal source to select the Drive Data Set, bit 2 (DDS, bit 2).  
Dependency: Refer to: r0051, r0837  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0823[0...n]**  
BI: Drive Data Set selection DDS bit 3 / DDS select., bit 3  
VECTOR_G  
Can be changed: C2(15), T  
Data type: Unsigned32 / Binary  
P-Group: Data sets  
Not for motor type: -  
Min -  
Max -  
Calculated: -  
Dynamic index: CDS, p0170  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting 0  
Access level: 3  
Func. diagram: 8565  

Description: Sets the signal source to select the Drive Data Set, bit 3 (DDS, bit 3).  
Dependency: Refer to: r0051, r0837  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0824[0...n]**  
BI: Drive Data Set selection DDS bit 4 / DDS select., bit 4  
VECTOR_G  
Can be changed: C2(15), T  
Data type: Unsigned32 / Binary  
P-Group: Data sets  
Not for motor type: -  
Min -  
Max -  
Calculated: -  
Dynamic index: CDS, p0170  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting 0  
Access level: 3  
Func. diagram: 8565, 8575  

Description: Sets the signal source to select the Drive Data Set, bit 4 (DDS, bit 4).  
Dependency: Refer to: r0051, r0837  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0826[0...n]</td>
<td>Motor changeover, motor number / Mot_chng mot No.</td>
</tr>
<tr>
<td>p0827[0...n]</td>
<td>Motor changeover status word bit number / Mot_chg ZSW bitNo.</td>
</tr>
<tr>
<td>p0828[0...n]</td>
<td>BI: Motor changeover, feedback signal / Mot_chng fdbk sig</td>
</tr>
</tbody>
</table>

#### Parameter Descriptions

**p0826[0...n]**
- **Description:** Sets the freely-assignable motor number for the motor changeover.
- **Dependency:** Refer to: p0827
- **Caution:** When changing over motor data sets with the same motor number (e.g. star-delta changeover) and for a motor with brake, the motor brake remains open during the changeover.
- **Note:** When the motor data sets are changed over, the following applies: The same motor number signifies the same thermal model. For the same motor number, the correction values of the Rs, Lh or kT adaptation are applied for the data set changeover (refer to r1782, r1787, r1797).

**p0827[0...n]**
- **Description:** Sets the bit number for every motor data set.
- **Example:**
  - p0827[0] = 0: For MDS0, r0830.0 is switched.
  - p0827[1] = 5: For MDS1, r0830.5 is switched.
- **Dependency:** Refer to: p0826, r0830
- **Note:** A motor is only changed over (a new motor selected) after the pulses have been suppressed. When the motor data sets are changed over, the following applies:
  - Bit numbers that are not identical, signify that the motor must be changed over.

**p0828[0...n]**
- **Description:** Sets the signal source for the feedback signal when changing over the motor.
- **Dependency:** Refer to: p0833
- **Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### r0830.0...15

**Description:**
Displays the status word of the motor changeover.
These signals can be connected to digital outputs to change over the motor.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Motor selection, bit 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Motor selection, bit 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Motor selection, bit 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Motor selection, bit 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Motor selection, bit 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Motor selection, bit 5</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Motor selection, bit 6</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Motor selection, bit 7</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Motor selection, bit 8</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Motor selection, bit 9</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Motor selection, bit 10</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Motor selection, bit 11</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Motor selection, bit 12</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Motor selection, bit 13</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Motor selection, bit 14</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Motor selection, bit 15</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0827

### p0831[0...15]

**Description:**
Sets the signal source for the feedback signal of the contactors when changing over motors.
There is a fixed inter-relationship between energizing the contactor and the feedback signal.

**Example:**
A changeover is to be made between MDS0 (motor 0) and MDS1 (motor 1). The contactors should be switched using bit 4 (contactor 0) and 5 (contactor 1). The changeover should be made with an interconnection of the feedback signal.

**Implementation:**
MDS0: p0827[0] = 4, interconnect output to switch contactor 0 to r0830.4, p0831[4] = "input, feedback signal, contactor 0"
MDS1: p0827[1] = 5, interconnect output to switch contactor 1 to r0830.5, p0831[5] = "input, feedback signal, contactor 1"

The following sequence applies when changing over from MDS0 to MDS1:
1. The status bit r0830.4 is deleted. When the feedback signal (p0831[4]) is connected, the system waits until the feedback signal "contactor open" is displayed. If the feedback signal is not connected, then the system waits for the switch-off interlocking time of 320 ms.
2. The status bit r0830.5 is set. If the feedback signal (p0831[5]) is connected, the system waits until the feedback signal "contactor closed" is displayed. If the feedback signal is not connected, then the system waits for the switch-on interlocking time of 160 ms.
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Feedback signal contactor 0</td>
<td></td>
<td>00</td>
<td>Feedback signal contactor 0</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[1]</td>
<td>Feedback signal contactor 1</td>
<td></td>
<td>01</td>
<td>Feedback signal contactor 1</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[2]</td>
<td>Feedback signal contactor 2</td>
<td></td>
<td>02</td>
<td>Feedback signal contactor 2</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[3]</td>
<td>Feedback signal contactor 3</td>
<td></td>
<td>03</td>
<td>Feedback signal contactor 3</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[4]</td>
<td>Feedback signal contactor 4</td>
<td></td>
<td>04</td>
<td>Feedback signal contactor 4</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[5]</td>
<td>Feedback signal contactor 5</td>
<td></td>
<td>05</td>
<td>Feedback signal contactor 5</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[6]</td>
<td>Feedback signal contactor 6</td>
<td></td>
<td>06</td>
<td>Feedback signal contactor 6</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[7]</td>
<td>Feedback signal contactor 7</td>
<td></td>
<td>07</td>
<td>Feedback signal contactor 7</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[8]</td>
<td>Feedback signal contactor 8</td>
<td></td>
<td>08</td>
<td>Feedback signal contactor 8</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[9]</td>
<td>Feedback signal contactor 9</td>
<td></td>
<td>09</td>
<td>Feedback signal contactor 9</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[10]</td>
<td>Feedback signal contactor 10</td>
<td></td>
<td>10</td>
<td>Feedback signal contactor 10</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[12]</td>
<td>Feedback signal contactor 12</td>
<td></td>
<td>12</td>
<td>Feedback signal contactor 12</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[13]</td>
<td>Feedback signal contactor 13</td>
<td></td>
<td>13</td>
<td>Feedback signal contactor 13</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[14]</td>
<td>Feedback signal contactor 14</td>
<td></td>
<td>14</td>
<td>Feedback signal contactor 14</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
<tr>
<td>[15]</td>
<td>Feedback signal contactor 15</td>
<td></td>
<td>15</td>
<td>Feedback signal contactor 15</td>
<td>Closed</td>
<td>Opened</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Dependency
Refer to: p0831

<table>
<thead>
<tr>
<th>p0832.0...15</th>
<th>CO/BO: Mot. changeover, contactor feedback sig. status word / Mot_chng fdbk ZSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 Dynamic index: - Func. diagram: 8575</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max               Factory setting</td>
</tr>
<tr>
<td>0000</td>
<td>0000              0010 bin</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status word of the contactor feedback signals when changing over a motor.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Contactor changeover from the application/drive</td>
<td>Drive</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Pulse suppression by application/drive</td>
<td>Drive</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Suppress drive parking for EDS changeover</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0831

### Data set changeover configuration / DS_chng config

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Contactor changeover from the application/drive</td>
<td>Drive</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Pulse suppression by application/drive</td>
<td>Drive</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Suppress drive parking for EDS changeover</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>
**Note:**

Re bit 00:
When the bit is set and the motor has to be changed over, then p0827 must be set differently in the appropriate motor data sets.

Re bit 02:
The bit defines whether, for an EDS changeover, the status signal Gn_ZSW.14 is suppressed (parking encoder active).

Re motor changeover to running motor:
The "flying restart" function should also be activated (p1200) when changing over to a motor that is already running.

### r0835.2

**CO/BO: Data set changeover status word / DDS_ZSW**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 8575</td>
<td></td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
---|---|---
- | - | -

**Description:**
Displays the status word for the drive data set changeover.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>02</td>
<td>Internal parameter calculation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
Re bit 02:
A data set changeover is delayed by the time required for the internal parameter calculation.

### r0835.0...11

**CO/BO: Data set changeover status word / DDS_ZSW**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 8575</td>
<td></td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Min** | **Max** | **Factory setting**
---|---|---
- | - | -

**Description:**
Displays the status word for the drive data set changeover.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Motor changeover active</td>
<td>Yes</td>
<td>No</td>
<td>8575</td>
</tr>
<tr>
<td>01</td>
<td>Encoder changeover active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Internal parameter calculation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Armature short circuit active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Identification running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Friction characteristic record running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Rotating measurement running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Motor data identification running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Wait for pulse suppression</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Wait for motor changeover feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
This parameter is only supplied with up-to-date values if data set changeover has been selected or is running.

Re bit 00:
The signal is only influenced when a motor changeover is set via p0827 (unequal bit numbers).

Re bit 01:
The signal is only influenced when an encoder changeover is set via p0187, p0188, or p0189.

Re bit 02:
A data set changeover is delayed by the time required for the internal parameter calculation.

Re bit 04:
A data set changeover is only carried out when the armature short circuit is not activated.

Re bit 05:
The following applies for SERVO:
A data set changeover is only carried out when pole position identification, encoder adjustment, motor data identification, and rotating measurement are not running.
The following applies for VECTOR:

A data set changeover is only carried out when pole position identification is not running.

Re bit 06:
A data set changeover is only carried out when the friction characteristic record is not running.

Re bit 07 (VECTOR only):
A data set changeover is only carried out when rotating measurement is not running.

Re bit 08 (VECTOR only):
A data set changeover is only carried out when motor data identification is not running.

Re bit 10:
A motor changeover is set with p0833.1 = 1. It can only be carried out when the application performs pulse suppression.

Re bit 11:
A motor changeover is set with p0833.0 = 1. The pulses are only enabled when the "Motor changeover feedback" signal is detected.

### r0836.0...3
**CO/BO: Command Data Set CDS selected / CDS selected**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>CDS select. bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>CDS select. bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>CDS select. bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>CDS select. bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0050, p0810, p0811

**Note:**
Command data sets are selected via binector input p0810 and following.

The currently effective command data set is displayed in r0050.

### r0837.0...4
**CO/BO: Drive Data Set DDS selected / DDS selected**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DDS select. bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DDS select. bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DDS select. bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>DDS select. bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>DDS select. bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0051, p0820, p0821, p0822, p0823, p0824

**Note:**
Drive data sets are selected via binector input p0820 and following.

The currently effective drive data set is displayed in r0051.

If there is only one data set, then a value of 0 is displayed in this parameter and not the selection via binector inputs.
### List of parameters

#### r0838[0...3]
**Motor/Encoder Data Set selected / MDS/EDS selected**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> 8565</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Displays, signals</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the selected Motor Data Set (MDS) and the selected Encoder Data Sets (EDS).

**Index:**
- [0] = Motor Data Set MDS selected
- [1] = Encoder 1 Encoder Data Set EDS selected
- [2] = Encoder 2 Encoder Data Set EDS selected
- [3] = Encoder 3 Encoder Data Set EDS selected

**Dependency:**
Refer to: r0049, p0186, p0187, p0188, p0189

**Note:**
Value 99 means the following: No encoder assigned (not configured).

#### p0839
**Motor changeover contactor control delay time / Mot_chg ctrl t_del**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(3)</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Motor</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>500 [ms]</td>
<td>0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the delay time for the contactor control for the motor changeover.

**Note:**
The delay time is taken into account in the following cases:
- for feedback signal, previous contactor "Open". The new motor contactor is controlled (energized) after the delay time has expired.
- for the feedback signal, new motor contactor "Closed". The pulses are enabled after the delay time has expired.

#### p0840[0...n]
**BI: ON / OFF (OFF1) / ON / OFF (OFF1)**

<table>
<thead>
<tr>
<th>B_INF, VECTOR_G</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32 / Binary</td>
<td><strong>Dynamic index:</strong> CDS, p0170</td>
<td><strong>Func. diagram:</strong> 2501, 2610, 8720, 8820, 8920</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Commands</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the command "ON/OFF (OFF1)"

**Recommend:**
When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.

**Dependency:**
Refer to: p1055, p1056

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

⚠️ **Notice:**
For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056.
The command "ON/OFF (OFF1)" can be issued using binector input p0840 or p1055/p1056.
For binector input p0840 = 0 signal, the switch-on inhibit is acknowledged.
Only the signal source that originally powered up can also power down again.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
For drives with closed-loop speed control (p1300 = 20, 21), the following applies:
- BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression)
For drives with closed-loop torque control (p1300 = 22, 23), the following applies:
- BI: p0840 = 0 signal: immediate pulse suppression

For drives with closed-loop torque control (activated using p1501), the following applies:
- BI: p0840 = 0 signal: No dedicated braking response, but pulse cancelation when standstill is detected (p1226, p1227)

For drives with closed-loop speed/torque control, the following applies:
- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

For active infeeds (Active Line Module and Smart Line Module) the following applies:
- BI: p0840 = 0 signal: OFF1 (reduce Vdc along the ramp, then pulse suppression and pre-charging contactor/line contactor open)
- BI: p0840 = 0/1 signal: ON (pre-charging contactor/line contactor close, pulses can be enabled)

For passive infeeds (Basic Line Module) the following applies:
- BI: p0840 = 0 signal: OFF1 (pre-charging contactor/line contactor open)
- BI: p0840 = 0/1 signal: ON (pre-charging contactor/line contactor close)

r0863.1 of a drive can also be selected as signal source.

<table>
<thead>
<tr>
<th>p0844[0...n]</th>
<th>BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF, VECTOR_G</strong></td>
<td><strong>Can be changed:</strong> T  <strong>Calculated:</strong> -  <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32 / Binary</td>
<td><strong>Dynamic index:</strong> CDS, p0170  <strong>Func. diagram:</strong> 2501, 8720, 8820, 8920</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Commands</td>
<td><strong>Units group:</strong> -  <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -  <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong>  <strong>Factory setting</strong></td>
</tr>
<tr>
<td>-</td>
<td>-  1</td>
</tr>
</tbody>
</table>

**Description:** Sets the first signal source for the command "No coast down/coast down (OFF2)". The following signals are AND'ed:
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"

For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).

BI: p0844 = 0 signal or BI: p0845 = 0 signal
- OFF2 (immediate pulse suppression and switch on inhibit)
BI: p0844 = 1 signal and BI: p0845 = 1 signal
- No OFF2 (enable is possible)

**Caution:** When "master control from PC" is activated, this binector input is ineffective.

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:** For Active Line Modules, Smart Line Modules and binector input p0844 = 0 signal or p0845 = 0 signal, the following applies:
- pre-charging contactor/line contactor is additionally opened.

<table>
<thead>
<tr>
<th>p0845[0...n]</th>
<th>BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF, VECTOR_G</strong></td>
<td><strong>Can be changed:</strong> T  <strong>Calculated:</strong> -  <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32 / Binary</td>
<td><strong>Dynamic index:</strong> CDS, p0170  <strong>Func. diagram:</strong> 2501, 8720, 8820, 8920</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Commands</td>
<td><strong>Units group:</strong> -  <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -  <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong>  <strong>Factory setting</strong></td>
</tr>
<tr>
<td>-</td>
<td>-  1</td>
</tr>
</tbody>
</table>

**Description:** Sets the second signal source for the command "No coast down/coast down (OFF2)". The following signals are AND'ed:
- BI: p0844 "No coast-down / coast-down (OFF2) signal source 1"
- BI: p0845 "No coast-down / coast-down (OFF2) signal source 2"
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 1 (STW1.1).
- OFF2 (immediate pulse suppression and switch on inhibit)
- No OFF2 (enable is possible)

Caution:
When "master control from PC" is activated, this binector input is effective.

Note:
For Active Line Modules, Smart Line Modules and binector input p0844 = 0 signal or p0845 = 0 signal, the following applies:
- pre-charging contactor/line contactor is additionally opened.

**p0848[0...n]**  
BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1  
VECTOR_G  
Can be changed: T  
Calculated: -  
Access level: 3  
Data type: Unsigned32 / Binary  
Dynamic index: CDS, p0170  
Func. diagram: 2501  
P-Group: Commands  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting 1  
Description:  
Sets the first signal source for the command "No quick stop/quick stop (OFF3)".  
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"  
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"  
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)
- No OFF3 (enable is possible)

Caution:
When "master control from PC" is activated, this binector input is ineffective.

Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0849[0...n]**  
BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2  
VECTOR_G  
Can be changed: T  
Calculated: -  
Access level: 3  
Data type: Unsigned32 / Binary  
Dynamic index: CDS, p0170  
Func. diagram: 2501  
P-Group: Commands  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting 1  
Description:  
Sets the second signal source for the command "No quick stop/quick stop (OFF3)".  
The following signals are AND'ed:
- BI: p0848 "No quick stop / quick stop (OFF3) signal source 1"  
- BI: p0849 "No quick stop / quick stop (OFF3) signal source 2"  
For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2).
- OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)
- No OFF3 (enable is possible)

Caution:
When "master control from PC" is activated, this binector input is effective.
## Parameters

### List of parameters

**p0852[0...n]**  
**BI: Enable operation/inhibit operation / Operation enable**  

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: <strong>T</strong></th>
<th>Calculated: <strong>-</strong></th>
<th>Access level: <strong>3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong>: Unsigned32 / Binary</td>
<td><strong>Data type</strong>: Dynamic index: CDS, p0170</td>
<td><strong>Data type</strong>: Func. diagram: 2501, 8820, 8920</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong>: Commands</td>
<td><strong>Units group</strong>: -</td>
<td><strong>Unit selection</strong>: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong>: -</td>
<td><strong>Scaling</strong>: -</td>
<td><strong>Expert list</strong>: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the command "enable operation/inhibit operation". For the PROFIdrive profile, this command corresponds to control word 1 bit 3 (STW1.3).  
BI: p0852 = 0 signal  
Inhibit operation (suppress pulses).  
BI: p0852 = 1 signal  
Enable operation (pulses can be enabled).  

**Caution:** When "master control from PC" is activated, this binector input is ineffective.  

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**p0854[0...n]**  
**BI: Control by PLC/no control by PLC / Master ctrl by PLC**  

<table>
<thead>
<tr>
<th>B_INF, VECTOR_G</th>
<th>Can be changed: <strong>T</strong></th>
<th>Calculated: <strong>-</strong></th>
<th>Access level: <strong>3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong>: Unsigned32 / Binary</td>
<td><strong>Data type</strong>: Dynamic index: CDS, p0170</td>
<td><strong>Data type</strong>: Func. diagram: 2501, 8720, 8820, 8920</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong>: Commands</td>
<td><strong>Units group</strong>: -</td>
<td><strong>Unit selection</strong>: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong>: -</td>
<td><strong>Scaling</strong>: -</td>
<td><strong>Expert list</strong>: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the command "control by PLC/no control by PLC". For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).  
BI: p0854 = 0 signal  
No control by PLC  
BI: p0854 = 1 signal  
Master ctrl by PLC.  

**Caution:** When "master control from PC" is activated, this binector input is ineffective.  

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.  

**Note:** This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1.  
If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

**p0854**  
**BI: Control by PLC/no control by PLC / Master ctrl by PLC**  

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: <strong>T</strong></th>
<th>Calculated: <strong>-</strong></th>
<th>Access level: <strong>3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong>: Unsigned32 / Binary</td>
<td><strong>Data type</strong>: Dynamic index: -</td>
<td><strong>Data type</strong>: Func. diagram: 2501, 8720, 8820, 8920</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong>: Commands</td>
<td><strong>Units group</strong>: -</td>
<td><strong>Unit selection</strong>: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong>: -</td>
<td><strong>Scaling</strong>: -</td>
<td><strong>Expert list</strong>: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the command "control by PLC/no control by PLC". For the PROFIdrive profile, this command corresponds to control word 1 bit 10 (STW1.10).
**List of parameters**

### Caution:
When "master control from PC" is activated, this binector input is ineffective. 

### Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed. 
This bit is used to initiate a response for the drives when the control fails (F07220). If there is no control available, then binector input p0854 should be set to 1. If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

### Note:
The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake). 
If "enable speed controller" is withdrawn, then an existing brake will be closed. If "speed controller enable" is withdrawn, the pulses are not suppressed.

---

### p0855[0...n]
**BI: Unconditionally release holding brake / Uncond open brake**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI: p0854</td>
<td>0</td>
<td>0 signal No control by PLC</td>
</tr>
<tr>
<td>BI: p0852</td>
<td>1</td>
<td>1 signal Master ctrl by PLC.</td>
</tr>
</tbody>
</table>

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
If a control is available, then STW1.10 must be set to 1 (PZD1) so that the received data is updated. This applies regardless of the setting in p0854 and even in the case of free telegram configuration (p0922 = 999).

**Dependency:**
Refer to: p0858

**Note:**
The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).

### p0856[0...n]
**BI: Speed controller enable / n_ctrl enable**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI: p0855</td>
<td>1</td>
<td>1 signal Enables speed controller.</td>
</tr>
</tbody>
</table>

**Caution:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Dependency:**
Refer to: r0898

**Note:**
The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).

### p0857
**Power unit monitoring time / PU t_monit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI: p0857</td>
<td>100.0 [ms]</td>
<td>100.0 [ms] 60000.0 [ms] 6000.0 [ms]</td>
</tr>
</tbody>
</table>

**Caution:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Dependency:**
Refer to: r0898

**Note:**
The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Dependency:**
Refer to: p0858

**Note:**
The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).
The following applies for infeeds and drives:

The monitoring time is started after an 0/1 edge of the ON/OFF1 command. If the power unit does not return a READY signal within the monitoring time, then fault F06000 (infeeds) or F07802 (drives) is output.

For drives, the following also applies:

After the pulse enable (operation enabled, p0852), the monitoring time is re-started. If the infeed does not signal ready to the drive within the monitoring time (using BI: p0864 of the drive), fault F07840 is initiated.

**Dependency:** Refer to: F06000, F07802, F07840, F30027

**Notice:**

- The maximum time to pre-charge the DC link is monitored in the power unit and cannot be changed. The maximum duration of the pre-charging depends on the power class and the power unit design.
- The monitoring time for the pre-charging is started after the ON command (BI: p0840 = 0/1 signal). Fault F30027 is output when the maximum pre-charging duration is exceeded.

**Note:**

- The factory setting for p0857 depends on the power class and the design of the power unit.
- The monitoring time for the ready signal of the power unit includes the time to pre-charge the DC link and, if relevant, the de-bounce time of the contactors.
- If an excessively low value is entered into p0857, then after enable, this results in the corresponding fault.

**p0858[0...n]**

**BI: Unconditionally close holding brake / Uncond close brake**

<table>
<thead>
<tr>
<th>Vector_G</th>
<th>Can be changed:</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the command "unconditionally close holding brake".

**Dependency:** Refer to: p0855

**Note:**

- The signal via BI: p0858 (unconditionally close holding brake) has a higher priority than via BI: p0855 (unconditionally open holding brake).
- For a 1 signal via BI: p0858, the command "unconditionally close the holding brake" is executed and internally a zero setpoint is entered.

**p0860**

**BI: Line cont. fdbk sig / Line contact feedb**

<table>
<thead>
<tr>
<th>B_INF, Vector_G</th>
<th>Can be changed:</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
<td>863.1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the feedback signal from the line contactor.

**Recommend.:**

When the monitoring is activated (BI: p0860 not equal to r0863.1), then to control the line contactor, signal BO: r0863.1 of its own drive object should be used.

**Dependency:** Refer to: p0861, r0863

**Notice:**

- The line contactor monitoring is de-activated if the control signal of the particular drive object is set as the signal source for the feedback signal of the line contactor (BI: p0860 = r0863.1).
- The state of the line contactor is monitored depending on signal BO: r0863.1.

**Note:**

- When the monitoring is activated (BI: p0860 not equal to r0863.1), fault F07300 is then also output if the contactor is closed before it is controlled using r0863.1.
**p0861**  
**Line contactor monitoring time / LineContact t_mon**

<table>
<thead>
<tr>
<th>Description</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the monitoring time of the line contactor.</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2634, 8734, 8834, 8934</td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: p0860, r0863  
Refer to: F07300  
Note: The monitoring function is disabled for the factory setting of p0860.

**p0862**  
**Power unit ON delay / PU t_on**

<table>
<thead>
<tr>
<th>Description</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the delay time for the control command of the power unit and a line contactor, if used.</td>
<td>-</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2610, 8732, 8832, 8932</td>
</tr>
</tbody>
</table>

**Note:**  
This means that it is possible to realize a shifted (delayed) pre-charging or power-on using a single ON command. When the infeed units are active, before the line contactor is closed, an offset adjustment of the current measurement is carried out for a duration of 120 ms (p3491).

**r0863.0...2**  
**CO/BO: Drive coupling status word/control word / CoupleZSW/STW**

<table>
<thead>
<tr>
<th>Description</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the status and control words of the drive coupling.</td>
<td>-</td>
<td>2</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: p0864
Note:  
Re bit 00:  
Bit 0 signals that the infeed is ready.
When the operating signal is transferred via BO: r0863.0 this allows several drives to start (run-up) staggered over time when they are simultaneously powered up. 
To realize this, the following connections/interconnections are required:  
Drive 1: Interconnect BI: p0864 with BO: r0863.0 of the infeed  
Drive 2: Interconnect BI: p0864 with BO: r0863.0 of drive 1  
Drive 3: Interconnect BI: p0864 with BO: r0863.0 of drive 2, etc.  
The first drive only transfers the operating signal to the next drive after it has reached its ready condition. 
Re bit 01:  
Bit 1 is used to control an external line contactor. 
Re bit 02:  
This bit only signals line supply failure for Active Infeed (A_INF) and Smart Infeed (S_INF).

### p0864  
**BI: Infeed operation / INF operation**  
**VECTOR_G**  
Can be changed: T  
Data type: Unsigned32 / Binary  
P-Group: Commands  
Not for motor type: -  
Min: -  
Max: -  
Access level: 2  
Access level: 2  
Description: Sets the signal source for the operating signal of the infeed (e.g. BO: r0863.0).  
Dependency: Refer to: r0863  
Note: The sequence control of a servo/vector drive requires this signal. 
The following applies for an infeed without DRIVE-CLiQ:  
For these infeeds, the "ready" message is available via an output terminal. This signal must be connected to a digital input. The drives supplied from this infeed must use this signal as ready signal (BI: p0864 = digital input).

### p0868  
**Power unit DC switch debounce time / PU DC sw t_deboun**  
**VECTOR_G**  
Can be changed: T  
Data type: FloatingPoint32  
P-Group: Commands  
Not for motor type: -  
Min: 0 [ms]  
Max: 65000 [ms]  
Factor setting: 65000 [ms]  
Access level: 3  
Access level: 3  
Description: Sets the debounce time for the DC circuit breaker for Motor Modules in "chassis" format.  
Note: The following applies if p0868 = 65000 ms:  
The debounce time defined internally in the power unit's EEPROM is implemented.

### r0873  
**CO/BO: Infeed, total operation / INF total oper**  
**B_INF**  
Can be changed: -  
Data type: Unsigned16  
P-Group: Commands  
Not for motor type: -  
Min: -  
Max: -  
Access level: 2  
Access level: 2  
Description: Displays the operational readiness of the infeeds when using Smart Line Module (SLM) and Basic Line Module (BLM) together (mixed operation). 
In order that signal BO: r0873 is available at one of the infeeds, then BI: p0874 of the one infeed must be interconnected to BO: r0863.0 of the other infeed.  
Dependency: Refer to: r0863, p0874  
Note: Mixed operation is not possible with the Active Line Module (ALM)!
p0874  BI: Smart/ Basic Line Module operation / SLM/BLM operation

Can be changed: T  Calculated: -  Access level: 2
Data type: Unsigned32 / Binary  Dynamic index: -  Func. diagram: 8732, 8832
P-Group: Commands  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -  Factory setting 0

Description: Setting to interconnect the ready signal for mixed operation of Smart Line Module (SLM) and Basic Line Module (BLM).
In order that signal BO: r0873 is available at one of the infeeds, then BI: p0874 of the one infeed must be intercon-
nected to BO: r0863.0 of the other infeed.
Dependency: Refer to: r0863, r0873
Note: Mixed operation is not possible with the Active Line Module (ALM)!

p0894  Parking pre-setting / Parking pre-set

Can be changed: U, T  Calculated: -  Access level: 4
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Displays, signals  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -  Factory setting 0000 bin

Description: Pre-setting for the "Parking axis" and "Parking encoder" function.
Dependency: Refer to: p0480, p0897
Note: Re bit 00:
If there is at least one BICO interconnection for "Parking axis" or "Parking encoder", this default setting is taken into
consideration during power-up.

p0895[0...n]  BI: Activate/de-activate power unit components / PU_comp act/deact

Can be changed: T  Calculated: -  Access level: 1
Data type: Unsigned32 / Binary  Dynamic index: PDS, p0120  Func. diagram: -
P-Group: Displays, signals  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -  Factory setting 1

Description: Sets the signal source to activate/de-activate a power unit component.
Dependency: BI: p0895 = 0 signal
De-activating power unit components
BI: p0895 = 1 signal
Activating power unit components
Refer to: p0125, r0126
Refer to: A05054

Caution: It is not permissible to de-activate drive objects with safety functions enabled.
Notice: For Active Line Modules in the "Chassis" format, the Voltage Sensing Module (VSM, p0145) belonging to the power
unit is automatically activated/deactivated.
Note: The power unit is only de-activated when the pulses are suppressed.
For units connected in parallel, when one of the power units is de-activated, then the enable in p7001 is withdrawn.
**Parameters**

**List of parameters**

---

**r0896.0**  
**BO: Parking axis, status word / Parking axis, ZSW**  
**VECTOR_G**  
Can be changed: -  
Data type: Unsigned8  
P-Group: Displays, signals  
Not for motor type: -  
Min -  
Max -  
Dependency:  
Refer to: p0897  
Description: Displays the status word for the "parking axis" function.  
Bit field:  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Parking axis active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**p0897**  
**BI: Parking axis selection / Parking axis sel**  
**VECTOR_G**  
Can be changed: T  
Data type: Unsigned32 / Binary  
P-Group: Displays, signals  
Not for motor type: -  
Min -  
Max -  
Dependency:  
BI: p0897 = 0 signal  
The function "parking axis" is not selected.  
BI: p0897 = 1 signal  
The function "parking axis" is selected.  
Refer to: r0896  
Description: Sets the signal source to select the "parking axis" function.  
Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.  
Note: After it has been selected the "parking axis" function only becomes active when the pulses are suppressed.

---

**r0898.0...10**  
**CO/BO: Control word sequence control infeed / STW seq_ctrl INF**  
**B_INF**  
Can be changed: -  
Data type: Unsigned16  
P-Group: Displays, signals  
Not for motor type: -  
Min -  
Max -  
Dependency:  
Description: Displays control word 1 of the infeed.  
Bit field:  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**r0898.0...15**  
**CO/BO: Control word drive object 1 / STW DO1**  
**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**  
Can be changed: -  
Data type: Unsigned16  
P-Group: Displays, signals  
Not for motor type: -  
Min -  
Max -  
Dependency:  
Description: Displays the control word of drive object 1 (Control Unit).
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Synchronization signal SYN</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Real time synchronization PING</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Master sign-of-life bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Master sign-of-life bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Master sign-of-life bit 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Master sign-of-life bit 3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**r0898.10** CO/BO: Control word sequence control encoder DO / STW seq_ctrl encDO

**ENC**

- Can be changed: -
- Calculated: -
- Access level: 2

**Data type:** Unsigned16

**P-Group:** Displays, signals

**Not for motor type:** -

**Min**

- Max

**Factory setting**

**Description:** Displays the control word for sequence control on the encoder drive object.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**r0898.0...14** CO/BO: Control word sequence control / STW seq_ctrl

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 2

**Data type:** Unsigned16

**P-Group:** Displays, signals

**Not for motor type:** -

**Min**

- Max

**Factory setting**

**Description:** Displays the control word of the sequence control.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>OC / OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>Ramp-function generator enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>Continue ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>06</td>
<td>Speed setpoint enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>07</td>
<td>Command open brake</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>Jog 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>09</td>
<td>Jog 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Speed controller enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Command close brake</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

OC: Operating condition

**r0899.0...12** CO/BO: Status word sequence control infeed / ZSW seq_ctrl INF

**B_INF**

- Can be changed: -
- Calculated: -
- Access level: 2

**Data type:** Unsigned16

**P-Group:** Displays, signals

**Not for motor type:** -

**Min**

- Max

**Factory setting**

**Description:** Displays the status word of the infeed sequence control.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Rdy for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

04 No OFF2 active OFF2 inactive OFF2 active -
06 Sw on inhibit Yes No -
09 Control request Yes No -
11 Pre-charging compl Yes No -
12 Line contactor closed Yes No -

Note:
Re bits 00, 01, 02, 04, 06, 09:
For PROFIdrive, these signals are used for status word 1.

r0899.0...15 CO/BO: Status word drive object 1 / ZSW DO1
CU_G130_DP,
CU_G130_PN,
CU_G150_DP,
CU_G150_PN
Can be changed: -
Data type: Unsigned16
P-Group: Displays, signals
Not for motor type: -
Min
Max
Factory setting
Description:
Displays the status word from drive object 1 (Control Unit).
Bit field:
Bit  Signal name  1 signal  0 signal  FP
00  reserved Yes No -
03  Fault present Yes No -
07  Alarm present Yes No -
08  System time synchronized Yes No -
12  Slave sign-of-life bit 0 Yes No -
13  Slave sign-of-life bit 1 Yes No -
14  Slave sign-of-life bit 2 Yes No -
15  Slave sign-of-life bit 3 Yes No -

r0899.7...9 CO/BO: Status word sequence control encoder DO / ZSW seq_ctrl encDO
ENC
Can be changed: -
Data type: Unsigned16
P-Group: Displays, signals
Not for motor type: -
Min
Max
Factory setting
Description:
Displays the status word for sequence control on the encoder drive object.
Bit field:
Bit  Signal name  1 signal  0 signal  FP
07  Drive ready Yes No -
09  Control request Yes No -

Note:
For PROFIdrive, this signal is used for status word ZSW2_ENC.

r0899.0...15 CO/BO: Status word sequence control / ZSW seq_ctrl
VECTOR_G
Can be changed: -
Data type: Unsigned16
P-Group: Displays, signals
Not for motor type: -
Min
Max
Factory setting
Description:
Displays the status word of the sequence control.
Bit field:
Bit  Signal name  1 signal  0 signal  FP
00  Rdy for switch on Yes No -
01  Ready Yes No -
02  Operation enabled Yes No -
03  Jog active Yes No -
04  No coasting active OFF2 inactive OFF2 active -
05  No Quick Stop active OFF3 inactive OFF3 active -
06  Switching on inhibited active Yes No -
**Parameters**

List of parameters

07 Drive ready  Yes  No  -
08 Controller enable  Yes  No  -
09 Control request  Yes  No  -
11 Pulses enabled  Yes  No  -
12 Open holding brake  Yes  No  -
13 Command close holding brake  Yes  No  -
14 Pulse enable from the brake control  Yes  No  -
15 Setpoint enable from the brake control  Yes  No  -

**Note:**

Re bits 00, 01, 02, 04, 05, 06, 09:
For PROFIdrive, these signals are used for status word 1.
Re bit 13:
When the "Safe Brake Control" (SBC) is activated and selected, the brake is no longer controlled using this signal.
Re bit 14, 15:
These signals are only of significance when the "extended brake control" function module is activated (r0108.14 = 1).

**p0918**

**PROFIBUS address / PB address**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0918 CU_G130_DP, CU_G150_DP</td>
<td>Displays or sets the PROFIBUS address for PROFIBUS interface on the Control Unit. The address can be set as follows: 1) Using the address switch on the Control Unit. --&gt; Can only be read and displays the selected address. --&gt; Change only becomes effective after a POWER ON. 2) Using p0918 --&gt; Only if the address 00 hex, 7F hex, 80 hex, or FF hex has been set using the address switch. --&gt; The address is saved in a non-volatile fashion using the function &quot;copy from RAM to ROM&quot;. --&gt; Change only becomes effective after a POWER ON.</td>
<td>1 126</td>
<td>126</td>
</tr>
</tbody>
</table>

**Note:**

Permissible PROFIBUS addresses: 1 ... 126 (01 hex ... 7E hex)
Address 126 is used for commissioning.
Every PROFIBUS address change only becomes effective after a POWER ON.
The parameter is not influenced by setting the factory setting.

**p0922**

**IF1 PROFIdrive telegram selection / IF1 PD Telegr_sel**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
</table>

**Dependency:**

Refer to: F01505, F01506

**Note:**

If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.
The inhibited interconnections can only be changed again after setting value 999.
Parameters
List of parameters

**p0922 IF1 PROFIdrive telegram selection / IF1 PD Telegr_sel**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>Sets the send and receive telegram.</td>
<td>81: SIEMENS telegram 81, PZD-2/6</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>82: SIEMENS telegram 82, PZD-2/7</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>83: SIEMENS telegram 83, PZD-2/8</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td>Free telegram configuration with BICO</td>
<td>999: Free telegram configuration with BICO</td>
<td>999</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p2038
- Refer to: F01505, F01506

**Note:**
If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.

The inhibited interconnections can only be changed again after setting value 999.

---

**p0922 IF1 PROFIdrive telegram selection / IF1 PD Telegr_sel**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the send and receive telegram.</td>
<td>1: Standard telegram 1, PZD-2/2</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Standard telegram 2, PZD-4/4</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20: Standard telegram 20, PZD-2/6</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>220: SIEMENS telegram 220, PZD-10/10</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td></td>
<td>352: SIEMENS telegram 352, PZD-6/6</td>
<td>999</td>
</tr>
<tr>
<td></td>
<td>Free telegram configuration with BICO</td>
<td>999: Free telegram configuration with BICO</td>
<td>999</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: F01505, F01506
Caution: Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20).
For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

Note: If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.
The inhibited interconnections can only be changed again after setting value 999.

### p0922 IF1 PROFIdrive telegram selection / IF1 PD Telegr_sel

**VECTOR_G (n/M)**

**Can be changed:** C2(1), T

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Description:** Sets the send and receive telegram.

**Value:**

1: Standard telegram 1, PZD-2/2
2: Standard telegram 2, PZD-4/4
3: Standard telegram 3, PZD-5/9
4: Standard telegram 4, PZD-6/14
20: Standard telegram 20, PZD-2/6
220: SIEMENS telegram 220, PZD-10/10
352: SIEMENS telegram 352, PZD-6/6
999: Free telegram configuration with BICO

**Dependency:** Refer to: F01505, F01506

**Caution:** Telegrams 2, 3 and 4 are not suitable for sensorless vector control (p1300 = 20).
For sensorless vector control, it is necessary that the setpoint speed is entered at the ramp-function generator input (e.g. p1070) and not after the ramp-function generator (p1155).

**Note:** If a value is not equal to 999, a telegram is set and the automatically set interconnections in the telegram are inhibited.
The inhibited interconnections can only be changed again after setting value 999.

### r0924[0...1] ZSW bit pulses enabled / ZSW pulse enab

**VECTOR_G**

**Can be changed:** -

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Description:** Displays the position of the "Pulses enabled" status signal in the PROFIdrive telegram.

**Index:**

[0] = Signal number
[1] = Bit position

### p0925 PROFIdrive clock synchronous sign-of-life tolerance / PD SoL_tol

**ENC, VECTOR_G (n/M)**

**Can be changed:** U, T

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Description:** Sets the number of tolerated consecutive sign-of-life errors of the clock-cycle synchronous master.
The sign-of-life signal is normally received in PZD4 (control word 2) from the master.

**Dependency:** Refer to: p2045, r2065
Refer to: F01912

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

1-263
Parameters
List of parameters

Note: The sign-of-life monitoring is disabled for p0925 = 65535.

**r0930**  
PROFIdrive operating mode / PD operating mode

<table>
<thead>
<tr>
<th>Data type: Unsigned16</th>
<th>Dynamic index: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Setpoints</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description: Displays the operating mode.
1: Closed-loop speed controlled operation with ramp-function generator
2: Closed-loop position controlled operation
3: Closed-loop speed controlled operation without ramp-function generator

**r0944**  
CO: Counter for fault buffer changes / Fault buff change

Can be changed: -  
Calculated: -  
Access level: 2

Data type: Unsigned16  
Dynamic index: -  
Func. diagram: 8060

P-Group: Messages  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min                   | Max              | Factory setting |
-----------------------|------------------|-----------------|
-                     | -                |

Description: Displays fault buffer changes. This counter is incremented every time the fault buffer changes.
Recommend.: Used to check whether the fault buffer has been read out consistently.
Dependency: Refer to: r0945, r0947, r0948, r0949, r2109

**r0945[0...63]**  
Fault code / Fault code

Can be changed: -  
Calculated: -  
Access level: 2

Data type: Unsigned16  
Dynamic index: -  
Func. diagram: 1750, 8060

P-Group: Messages  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min                   | Max              | Factory setting |
-----------------------|------------------|-----------------|
-                     | -                |

Description: Displays the numbers of faults that have occurred.
Dependency: Refer to: r0947, r0948, r0949, r2109, r2130, r2136, r3120, r3122
Notice: The properties of the fault buffer should be taken from the corresponding product documentation.
Note: The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Fault buffer structure (general principle):
r0945[0], r0949[0], r0948[0], r2109[0], r3115[0] --> actual fault case, fault 1
...r0945[7], r0949[7], r0948[7], r2109[7], r3115[7] --> actual fault case, fault 8
r0945[8], r0949[8], r0948[8], r2109[8], r3115[8] --> 1st acknowledged fault case, fault 1
...r0945[15], r0949[15], r0948[15], r2109[15], r3115[15] --> 1st acknowledged fault case, fault 8
...r0945[56], r0949[56], r0948[56], r2109[56], r3115[56] --> 7th acknowledged fault case, fault 1
...r0945[63], r0949[63], r0948[63], r2109[63], r3115[63] --> 7th acknowledged fault case, fault 8
Parameters

List of parameters

r0946[0...65534] Fault code list / Fault code list

All objects
Can be changed: -
Calculated: -
Access level: 3
Data type: Unsigned16
Dynamic index: -
Func. diagram: 8060
P-Group: Messages
Unit selection: -
Not for motor type: -
Expert list: 0
Min -
Max -

Description:
Lists the fault codes stored in the drive unit.
The indices can only be accessed with a valid fault code.

Dependency:
The parameter assigned to the fault code is entered in r0951 under the same index.

r0947[0...63] Fault number / Fault number

All objects
Can be changed: -
Calculated: -
Access level: 3
Data type: Unsigned16
Dynamic index: -
Func. diagram: 1750, 8060
P-Group: Messages
Unit selection: -
Not for motor type: -
Expert list: 1
Min -
Max -

Description:
This parameter is identical to r0945.

r0948[0...63] Fault time received in milliseconds / t_fault recv ms

All objects
Can be changed: -
Calculated: -
Access level: 3
Data type: Unsigned32
Dynamic index: -
Func. diagram: 1750, 8060
P-Group: Messages
Unit selection: -
Not for motor type: -
Expert list: 1
Min - [ms]
Max - [ms]

Description:
Displays the system runtime in milliseconds when the fault occurred.

Dependency:
Refer to: r0945, r0947, r0949, r2109, r2114, r2130, r2133, r2136, r3115, r3120, r3122

Notice:
The time comprises r2130 (days) and r0948 (milliseconds).

Note:
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
When the parameter is read via PROFl drive, the TimeDifference data type applies.

r0949[0...63] Fault value / Fault value

All objects
Can be changed: -
Calculated: -
Access level: 3
Data type: Integer32
Dynamic index: -
Func. diagram: 1750, 8060
P-Group: Messages
Unit selection: -
Not for motor type: -
Expert list: 1
Min -
Max -

Description:
Displays additional information about the fault that occurred (as integer number).

Dependency:
Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3115, r3120, r3122

Note:
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.
### p0952 Fault cases, counter / Fault cases qty

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dynamic index:** -  
**P-Group:** Messages  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** 0  
**Max:** 65535  
**Factory setting:** 0

**Description:** Number of fault situations that have occurred since the last reset.  
**Dependency:** The fault buffer is deleted (cleared) by setting p0952 to 0.  
**Refer to:** r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136

### r0963 PROFIBUS baud rate / PB baud rate

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G150_DP</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dynamic index:** -  
**P-Group:** Communications  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** 0  
**Max:** 255  
**Factory setting:** -

**Description:** Displays the corresponding value for the PROFIBUS baud rate.  
**Value:**  
0: 9.6 kbit/s  
1: 19.2 kbit/s  
2: 93.75 kbit/s  
3: 187.5 kbit/s  
4: 500 kbit/s  
6: 1.5 Mbit/s  
7: 3 Mbit/s  
8: 6 Mbit/s  
9: 12 Mbit/s  
10: 31.25 kbit/s  
11: 45.45 kbit/s  
255: unknown

### r0964[0...6] Device identification / Device ident.

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dynamic index:** -  
**P-Group:** Communications  
**Units group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the device identification.  
**Index:**  
0 = Company (Siemens = 42)  
1 = Device type  
2 = Firmware version  
3 = Firmware date (year)  
4 = Firmware date (day/month)  
5 = Number of drive objects  
6 = Firmware patch/hot fix  

**Note:** Example:  
r0964[0] = 42 --> SIEMENS  
r0964[1] = device type, see below  
r0964[2] = 403 --> first part of the firmware version V04.03 (for second part, refer to index 6)  
r0964[3] = 2010 --> year 2010  
r0964[4] = 1705 --> 17th of May  
r0964[5] = 2 --> 2 drive objects  
r0964[6] = 200 --> second part, firmware version (complete version: V04.03.02.00)
### List of parameters

#### r0965
**PROFIdrive profile number / PD profile number**

<table>
<thead>
<tr>
<th>Device type</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Min**
- 

**Max**
- 

**Factory setting**
- 

**Description:** Displays the PROFIdrive profile number and profile version.

Constant value = 0329 hex.

Byte 1: Profile number = 03 hex = PROFIdrive profile

Byte 2: Profile version = 29 hex = Version 4.1

**Note:** When the parameter is read via PROFIdrive, the Octet String 2 data type applies.

#### p0969
**System runtime relative / t_System relative**

<table>
<thead>
<tr>
<th>Device type</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>T</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**P-Group:** Displays, signals

**Not for motor type:** -

**Min**
- 0 [ms]

**Max**
- 4294967295 [ms]

**Factory setting**
- 0 [ms]

**Description:** Displays the system runtime in ms since the last POWER ON.

**Note:** The value in p0969 can only be reset to 0.

The value overflows after approx. 49 days.

When the parameter is read via PROFIdrive, the TimeDifference data type applies.

#### p0970
**Reset infeed parameter / INF par reset**

<table>
<thead>
<tr>
<th>Device type</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF</td>
<td>C2(30)</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**P-Group:** Factory settings

**Not for motor type:** -

**Min**
- 0

**Max**
- 100

**Factory setting**
- 0

**Description:** The parameter is used to initiate a reset of the parameters of an individual infeed unit.

The parameters of the basic commissioning (refer to p0009) are in this case not reset (p0107, p0108, p0121, p0170). These can only be reset using the factory setting of the complete drive unit (p0976).

The sampling times (p0111, p0112, p0115) are only not reset if this results in a conflict with the basic clock cycle (p0110).

**Value:**
- 0: Inactive
- 1: Start a parameter reset
- 100: Start a BICO interconnection reset

**Notice:** After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:** A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.
p0970  ENCODER reset parameters / ENC par reset

**Description:**
The parameter is used to initiate the reset of the parameters on the ENCODER drive object.

Parameter p0141 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

**Value:**
- 0: Inactive
- 1: Start a parameter reset
- 100: Start a BICO interconnection reset

**Notice:**
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:**
A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

---

p0970  TB30 reset parameters / TB30 par reset

**Description:**
The parameter is used to initiate a reset of the parameters on Terminal Board 30 (TB30).

Parameter p0161 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976).

**Value:**
- 0: Inactive
- 1: Start a parameter reset
- 100: Start a BICO interconnection reset

**Notice:**
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:**
A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.

Parameter reset has been completed if p0970 and p0010 have been set to 0.

---

p0970  TM150 reset parameters / TM150 par reset

**Description:**
The parameter is used to initiate a reset of the parameters on Terminal Module 150 (TM150).

**Value:**
- 0: Inactive
- 1: Start a parameter reset
- 100: Start a BICO interconnection reset

**Dependency:**
Refer to: p0010

**Notice:**
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:**
A factory setting run can only be started if p0010 was first set to 30 (parameter reset).

At the end of the calculations, p0970 is automatically set to 0.
### p0970  TM31 reset parameters / TM31 par reset

| Description: | The parameter is used to initiate a reset of the parameters on Terminal Module 31 (TM31). The sampling time p4099 is not reset if in so doing a conflict occurs with the basic clock cycle. Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976). |
| Value: | 0: Inactive<br>1: Start a parameter reset<br>100: Start a BICO interconnection reset |
| Dependency: | Refer to: p0010 |
| Notice: | After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0. |
| Note: | A factory setting run can only be started if p0010 was first set to 30 (parameter reset). At the end of the calculations, p0970 is automatically set to 0. |

### p0970  TM54F reset parameters / TM54F par reset

| Description: | The parameter is used to initiate a reset of the parameters on Terminal Module 54F (TM54F). Parameter p0151 is not reset. It is only reset if the entire drive unit is reset to the factory settings (p0976). |
| Value: | 0: Inactive<br>1: Start a parameter reset<br>5: Starts a safety parameter reset<br>100: Start a BICO interconnection reset |
| Notice: | After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0. |
| Note: | A factory setting run can only be started if p0010 was first set to 30 (parameter reset). At the end of the calculations, p0970 is automatically set to 0. Parameter reset has been completed if p0970 and p0010 have been set to 0. For p0970 = 5 the following applies:<br>The password for Safety Integrated must be set.<br>When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.<br>Then save the parameters and carry out a POWER ON. |

### p0970  Reset drive parameters / Drive par reset

| Description: | The parameter is used to initiate the reset of the parameters of an individual drive unit. |
Parameters
List of parameters

Parameters p0100, p0205 (only for VECTOR) and the parameters of the basic drive commissioning (p0009) are not reset (p0107, p0108, p0111, p0112, p0115, p0121, p0130, p0131, p0140, p0141, p0142, p0170, p0186 ... p0189).
These can only be reset using the factory setting of the complete drive unit (p0970).

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>Inactive</td>
</tr>
<tr>
<td>1:</td>
<td>Start a parameter reset</td>
</tr>
<tr>
<td>5:</td>
<td>Starts a safety parameter reset</td>
</tr>
<tr>
<td>100:</td>
<td>Start a BICO interconnection reset</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: F01659

Notice:
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

Note:
A factory setting run can only be started if p0010 was first set to 30 (parameter reset).
At the end of the calculations, p0970 is automatically set to 0.
Parameter reset has been completed if p0970 and p0010 have been set to 0.

For p0970 = 5 the following applies:
The password for Safety Integrated must be set.
When Safety Integrated is enabled, this can result in error messages, which then require an acceptance test to be performed.
Then save the parameters and carry out a POWER ON.
For p0970 = 1 the following applies:
If a Safety Integrated function is parameterized (p9601), then the safety parameters are not reset. In this case, a fault F01659 is output with fault value 2.

<table>
<thead>
<tr>
<th>p0971</th>
<th>Save drive object parameters / Drv_obj par save</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Factory settings</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Setting to save the parameter of the particular drive object in the non-volatile memory.

Value:
0: Inactive
1: Save drive object

Dependency:
Refer to: p0977, p1960, p3845, r3996

Caution:
The Control Unit power supply may only be powered down after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

Notice:
Writing to parameters is inhibited while saving.
The progress while saving is displayed in r3996.

Note:
Starting from the particular drive object, the following parameters are saved:
CU3xx: Device-specific parameters and PROFIBUS device parameters.
Other objects: Parameters of the actual object and PROFIBUS device parameters.
Prerequisite:
In order that the parameter of a drive object, saved with p0971 = 1, is read the next time that the Control Unit is booted, then all parameters must, as a minimum, have first been saved once with p0977 = 1.

<table>
<thead>
<tr>
<th>p0972</th>
<th>Drive unit reset / Drv_unit reset</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Description:
Sets the required procedure to execute a hardware reset for the drive unit.

Value:
0: Inactive
1: Hardware-Reset immediate

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2: Hardware reset preparation
3: Hardware reset after cyclic communication has failed

**Danger:**
It must be absolutely ensured that the system is in a safe condition.
The memory card/device memory of the Control Unit must not be accessed.

**Note:**
If value = 1:
Reset is immediately executed and communications interrupted.
After communications have been established, check the reset operation (refer below).
If value = 2:
Help to check the reset operation.
Firstly, set p0972 = 2 and then read back. Secondly, set p0972 = 1 (it is possible that this request is possibly no longer acknowledged). The communication is then interrupted.
After communications have been established, check the reset operation (refer below).
If value = 3:
The reset is executed after interrupting cyclic communication. This setting is used to implement a synchronized reset by a control for several drive units.
If cyclic communication is not active, then the reset is immediately executed.
If the cyclic communication is active for both PROFinet interfaces, then the reset is executed after completing both cycle communications.
After communications have been established, check the reset operation (refer below).
To check the reset operation:
After the drive unit has been restarted and communications have been established, read p0972 and check the following:
p0972 = 0? --> The reset was successfully executed.
p0972 > 0? --> The reset was not executed.

**|**
<table>
<thead>
<tr>
<th>r0975[0...10]</th>
<th>Drive object identification / DO identification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All objects</strong></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Communications</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**
- **Max**
- **Factory setting**

**Description:**
Displays the identification of the drive object.

**Index:**
[0] = Company (Siemens = 42)
[1] = Drive object type
[2] = Firmware version
[3] = Firmware date (year)
[4] = Firmware date (day/month)
[5] = PROFinet drive object, type class
[6] = PROFinet drive object, sub-type Class 1
[7] = Drive object number
[8] = Reserved
[9] = Reserved
[10] = Firmware patch/hot fix

**Note:**
Example:
r0975[0] = 42 --> SIEMENS
r0975[1] = 11 --> SERVO drive object type
r0975[2] = 102 --> first part, firmware version V01.02 (second part, refer to index 10)
r0975[4] = 1401 --> 14th of January
r0975[5] = 1 --> PROFinet drive object, type class
r0975[6] = 9 --> PROFinet drive object sub-type class 1
r0975[7] = 2 --> drive object number = 2
r0975[8] = 0 (reserved)
### Parameters

#### List of parameters

- **p0976**: Reset and load all parameters / Reset load all parameters
  - **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
  - **Can be changed**: C1(30)
  - **Data type**: Unsigned16
  - **P-Group**: Factory settings
  - **Not for motor type**: -
  - **Description**: Resets or downloads all parameters of the drive system.
  - **Value**:  
    - **0**: Inactive
    - **1**: Start reset of all parameters to factory setting
    - **2**: Start download of param. saved in non-volatile mem w/ p0977=1
    - **3**: Start download of volatile parameters from RAM
    - **10**: Start download of param. saved in non-volatile mem w/ p0977=10
    - **11**: Start download of param. saved in non-volatile mem w/ p0977=11
    - **12**: Start download of param. saved in non-volatile mem w/ p0977=12
    - **20**: Start download Siemens internal setting 20
    - **21**: Start download Siemens internal setting 21
    - **22**: Start download Siemens internal setting 22
    - **23**: Start download Siemens internal setting 23
    - **24**: Start download Siemens internal setting 24
    - **25**: Start download Siemens internal setting 25
    - **26**: Start download Siemens internal setting 26
    - **100**: Start resetting of all BICO interconnections
    - **1011**: Start download of param. saved in volatile mem w/ p0977=1011
    - **1012**: Start download of param. saved in volatile mem w/ p0977=1012
    - **1013**: Start download of param. saved in volatile mem w/ p0977=1013
  - **Notice**: After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.
  - **Note**: After all of the parameters have been reset to their factory setting, the system must be commissioned for the first time again.
  - **Procedure**:  
    1. Set p0009 = 30 (parameter reset).
    2. Set p0976 to "required value". The system is rebooted.
    p0976 is automatically set to 0 and p0009 is automatically set to 1 after this has been carried out.

- **p0977**: Save all parameters / Save all parameters
  - **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
  - **Can be changed**: U, T
  - **Data type**: Unsigned16
  - **P-Group**: Factory settings
  - **Not for motor type**: -
  - **Description**: Saves all parameters of the drive system to the non-volatile memory.
  - **Value**:  
    - **0**: Inactive
    - **1**: Save in non-volatile memory - downloaded at POWER ON
    - **10**: Save as opt. in non-vol. memory - downloaded w/ p0976=10
    - **11**: Save as opt. in non-vol. memory - downloaded w/ p0976=11
    - **12**: Save as opt. in non-vol. memory - downloaded w/ p0976=12
    - **20**: Save in non-volatile memory as setting 20 (reserved)
    - **21**: Save in non-volatile memory as setting 21 (reserved)
    - **22**: Save in non-volatile memory as setting 22 (reserved)
    - **23**: Save in non-volatile memory as setting 23 (reserved)
    - **24**: Save in non-volatile memory as setting 24 (reserved)
    - **25**: Save in non-volatile memory as setting 25 (reserved)
26: Save in non-volatile memory as setting 26 (reserved)
80: Save in non-volatile memory time-optimized (reserved)
1011: Save in volatile memory, downloaded with p0976=1011
1012: Save in volatile memory, downloaded with p0976=1012
1013: Save in volatile memory, downloaded with p0976=1013

Dependency:
Refer to: p0976, p1960, p3845, r3996

Caution:
The Control Unit power supply may only be powered down after data has been saved (i.e. after data save has been started, wait until the parameter again has the value 0).

Notice:
Writing to parameters is inhibited while saving.
The progress while saving is displayed in r3996.

Note:
Parameters saved with p0977 = 10, 11 or 12 can be downloaded again with p0976 = 10, 11 or 12.

### p0978[0...24]

**List of drive objects / List of the DO**

<table>
<thead>
<tr>
<th>CU_G130_DP,</th>
<th>Can be changed: C1(1)</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Min**

| 0                        | 255                               |

**Max**

<table>
<thead>
<tr>
<th>[0] 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1...24] 0</td>
</tr>
</tbody>
</table>

**Description:**
This parameter is an image of p0101 in conformance with PROFIdrive.
Parameters p0101 and p0978 contain the following information:
1) The same number of drive objects
2) The same drive objects
In this sense, they are consistent.

**Difference between p0101 and p0978:**
p0978 can be re-sorted and a zero inserted in order to identify those drive objects that participate in the process data exchange and to define their sequence in the process data exchange. Drive objects that are listed after the first zero, are excluded from the process data exchange.

For p0978, in addition, the value 255 can be inserted a multiple number of times.
p0978[n] = 255 means: The drive object is visible for the PROFIBUS master and is empty (without any actual process data exchange). This allows cyclic communications of a PROFIBUS master with unchanged configuring to the drive units with a lower number of drive objects.

**Dependency:**
Refer to: p0101, p0971, p0977

**Note:**
p0978 cannot be changed when the drive system is first commissioned. The reason for this is that at this time the actual topology has still not been acknowledged (p0099 is still not equal to r0098 and p0009 is set to 0).

### r0979[0...10]

**PROFIdrive encoder format / PD encoder format**

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 4010, 4704</td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Min**

| -                         | -                   |

**Max**

| -                        |

**Factory setting**

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1...10]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the actual position encoder used according to PROFIdrive.

**Index:**

<table>
<thead>
<tr>
<th>[0] = Header</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] = Type, encoder 1</td>
</tr>
<tr>
<td>[2] = Resolution enc 1</td>
</tr>
<tr>
<td>[3] = Shift factor G1_XIST1</td>
</tr>
<tr>
<td>[4] = Shift factor G1_XIST2</td>
</tr>
<tr>
<td>[5] = Distinguishable revolutions encoder 1</td>
</tr>
<tr>
<td>[6...10] = Reserved</td>
</tr>
</tbody>
</table>

**Note:**
Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology
### Description:
Displays the actual position encoder used according to PROFIdrive.

### Index:
- **[0]** = Header
- **[1]** = Type, encoder 1
- **[2]** = Resolution enc 1
- **[3]** = Shift factor G1_XIST1
- **[4]** = Shift factor G1_XIST2
- **[5]** = Distinguishable distance encoder 1
- **[6...10]** = Reserved

### Note:
Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

### Description:
Displays the actual position encoder used according to PROFIdrive.

### Index:
- **[0]** = Header
- **[1]** = Type, encoder 1
- **[2]** = Resolution enc 1
- **[3]** = Shift factor G1_XIST1
- **[4]** = Shift factor G1_XIST2
- **[5]** = Distinguishable distance encoder 1
- **[6...10]** = Reserved
- **[11]** = Type, encoder 2
- **[12]** = Resolution enc 2
- **[13]** = Shift factor G2_XIST1
- **[14]** = Shift factor G2_XIST2
- **[15]** = Distinguishable revolutions encoder 2
- **[16...20]** = Reserved
- **[21]** = Type, encoder 3
- **[22]** = Resolution enc 3
- **[23]** = Shift factor G3_XIST1
- **[24]** = Shift factor G3_XIST2
- **[25]** = Distinguishable revolutions encoder 3
- **[26...30]** = Reserved

### Note:
Information about the individual indices can be taken from the following literature:
PROFIdrive Profile Drive Technology

### Description:
Displays the parameters that exist for this drive.
Parameters

List of parameters

Dependency:
Refer to: r0981, r0989

Note:
The existing parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

- r0980[0...299], r0981[0...299], ..., r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0981[0...299] List of existing parameters 2 / List avail par 2

| All objects | Can be changed: | Calculated: | Access level: 4
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Displays the parameters that exist for this drive.

Dependency:
Refer to: r0980, r0989

Note:
The existing parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

- r0980[0...299], r0981[0...299], ..., r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0989[0...299] List of existing parameters 10 / List avail par 10

| All objects | Can be changed: | Calculated: | Access level: 4
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Displays the parameters that exist for this drive.

Dependency:
Refer to: r0980, r0981

Note:
The existing parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here. In a long list, index 299 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

- r0980[0...299], r0981[0...299], ..., r0989[0...299]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).

r0990[0...99] List of modified parameters 1 / List chang. par 1

| All objects | Can be changed: | Calculated: | Access level: 3
<table>
<thead>
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<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
<td>-</td>
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<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Displays those parameters with a value other than the factory setting for this drive.

Dependency:
Refer to: r0991, r0999

Note:
Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a long list, index 99 contains the parameter number at which position the list continues.

This list consists solely of the following parameters:

- r0990[0...99], r0991[0...99], ..., r0999[0...99]

The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be read from a higher-level control system (e.g. PROFIBUS master).
Parameters

List of parameters

r0991[0...99] List of modified parameters 2 / List chang. par 2

All objects Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 0
Min - Max Factory setting
-
Description: Displays those parameters with a value other than the factory setting for this drive.
Dependency: Refer to: r0990, r0999
Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here. In a
long list, index 99 contains the parameter number at which position the list continues.
This list consists solely of the following parameters:
r0990[0...99], r0991[0...99] ... r0999[0...99]
The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be
read from a higher-level control system (e.g. PROFIBUS master).

r0999[0...99] List of modified parameters 10 / List chang. par 10

All objects Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 0
Min - Max Factory setting
-
Description: Displays those parameters with a value other than the factory setting for this drive.
Dependency: Refer to: r0990, r0991
Note: Modified parameters are displayed in indices 0 to 98. If an index contains the value 0, then the list ends here.
This list consists solely of the following parameters:
r0990[0...99], r0991[0...99] ... r0999[0...99]
The parameters in this list are not displayed in the expert list of the commissioning software. However, they can be
read from a higher-level control system (e.g. PROFIBUS master).

p1000[0...n] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

VECTOR_G Can be changed: C2(1), T Calculated: - Access level: 1
Data type: Unsigned32 Dynamic index: CDS, p0170 Func. diagram: -
P-Group: Commands Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min 0 Max 999999 Factory setting 0

Description: Runs the corresponding macro files.
The Connector Inputs (CI) for the speed setpoints of the appropriate Command Data Set (CDS) are appropriately
interconnected.
The selected macro file must be available on the memory card/device memory.
Example: p1000 = 6 --> the macro file PM000006.ACX is run.
Dependency: Refer to: p0015, p0700, p1500, r8572
Caution: When executing a specific macro, the corresponding programmed settings are made and become active.
Notice: No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN
group!
Note: The macros in the specified directory are displayed in r8572. r8572 is not in the expert list of the commissioning
software.
Macros available as standard are described in the technical documentation of the particular product.
CI: Connector Input
### List of parameters

#### p1001[0...n]
**CO: Fixed speed setpoint 1 / n_set_fixed 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Sets a value for the fixed speed / velocity setpoint 1.</td>
<td>Refer to: p1020, p1021, p1022, p1023, r1024, r1197</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong> 2</td>
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<td></td>
<td></td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td></td>
<td></td>
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<td><strong>Access level:</strong> 2</td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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<td><strong>P-Group:</strong> Setpoints</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td><strong>Access level:</strong> 2</td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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<tr>
<td><strong>P-Group:</strong> Setpoints</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td></td>
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<td><strong>Access level:</strong> 2</td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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<td><strong>P-Group:</strong> Setpoints</td>
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<td><strong>Not for motor type:</strong> -</td>
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<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
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<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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</table>

#### p1002[0...n]
**CO: Fixed speed setpoint 2 / n_set_fixed 2**

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<th>Notice</th>
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<td>Refer to: p1020, p1021, p1022, p1023, r1024, r1197</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
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</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td><strong>Access level:</strong> 2</td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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<td><strong>P-Group:</strong> Setpoints</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td><strong>Not for motor type:</strong> -</td>
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<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
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<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td><strong>P-Group:</strong> Setpoints</td>
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<tr>
<td><strong>Not for motor type:</strong> -</td>
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</tr>
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<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
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<td></td>
</tr>
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<td><strong>Max</strong></td>
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</table>

#### p1003[0...n]
**CO: Fixed speed setpoint 3 / n_set_fixed 3**

<table>
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<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
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<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Sets a value for the fixed speed / velocity setpoint 3.</td>
<td>Refer to: p1020, p1021, p1022, p1023, r1024, r1197</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong> 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td><strong>Access level:</strong> 2</td>
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<td><strong>Data type:</strong> FloatingPoint32</td>
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<td><strong>P-Group:</strong> Setpoints</td>
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<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
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<td></td>
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<td><strong>Access level:</strong> 2</td>
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</table>

#### p1004[0...n]
**CO: Fixed speed setpoint 4 / n_set_fixed 4**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Sets a value for the fixed speed / velocity setpoint 4.</td>
<td>Refer to: p1020, p1021, p1022, p1023, r1024, r1197</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Setpoints</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Access level:</strong> 2</td>
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</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Units group</th>
<th>Access level</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1005[0...n]</strong></td>
<td>CO: Fixed speed setpoint 5 / n_set_fixed 5</td>
<td>Can be changed: U, T</td>
<td>Data type: FloatingPoint32</td>
<td>Not for motor type: -</td>
<td>2</td>
<td>-210000.000 [rpm] 210000.000 [rpm] 0.000 [rpm]</td>
</tr>
<tr>
<td></td>
<td>VECTOR_G</td>
<td>Calculated: -</td>
<td>Dynamic index: DDS, p0180</td>
<td>Min Max</td>
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<tr>
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<td></td>
<td>Dynamic index: DDS, p0180</td>
<td>P-Group: Setpoints</td>
<td>Vector group: 3_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Function diagram: 3010</td>
<td>Not for motor type: -</td>
<td>Scaling: p2000</td>
<td>Expert list: 1</td>
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<td></td>
<td></td>
<td>Access level: 2</td>
<td>Min</td>
<td>210000.000 [rpm]</td>
<td>Factory setting</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Max</td>
<td>0.000 [rpm]</td>
<td></td>
<td></td>
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<tr>
<td><strong>p1006[0...n]</strong></td>
<td>CO: Fixed speed setpoint 6 / n_set_fixed 6</td>
<td>Can be changed: U, T</td>
<td>Data type: FloatingPoint32</td>
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<td>2</td>
<td>-210000.000 [rpm] 210000.000 [rpm] 0.000 [rpm]</td>
</tr>
<tr>
<td></td>
<td>VECTOR_G</td>
<td>Calculated: -</td>
<td>Dynamic index: DDS, p0180</td>
<td>Min Max</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Dynamic index: DDS, p0180</td>
<td>P-Group: Setpoints</td>
<td>Vector group: 3_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Function diagram: 3010</td>
<td>Not for motor type: -</td>
<td>Scaling: p2000</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access level: 2</td>
<td>Min</td>
<td>210000.000 [rpm]</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Max</td>
<td>0.000 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1007[0...n]</strong></td>
<td>CO: Fixed speed setpoint 7 / n_set_fixed 7</td>
<td>Can be changed: U, T</td>
<td>Data type: FloatingPoint32</td>
<td>Not for motor type: -</td>
<td>2</td>
<td>-210000.000 [rpm] 210000.000 [rpm] 0.000 [rpm]</td>
</tr>
<tr>
<td></td>
<td>VECTOR_G</td>
<td>Calculated: -</td>
<td>Dynamic index: DDS, p0180</td>
<td>Min Max</td>
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<tr>
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<td></td>
<td>Dynamic index: DDS, p0180</td>
<td>P-Group: Setpoints</td>
<td>Vector group: 3_1</td>
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<td>Function diagram: 3010</td>
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<td>Scaling: p2000</td>
<td>Expert list: 1</td>
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<td>Access level: 2</td>
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<td>210000.000 [rpm]</td>
<td>Factory setting</td>
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<td>Max</td>
<td>0.000 [rpm]</td>
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<td><strong>p1008[0...n]</strong></td>
<td>CO: Fixed speed setpoint 8 / n_set_fixed 8</td>
<td>Can be changed: U, T</td>
<td>Data type: FloatingPoint32</td>
<td>Not for motor type: -</td>
<td>2</td>
<td>-210000.000 [rpm] 210000.000 [rpm] 0.000 [rpm]</td>
</tr>
<tr>
<td></td>
<td>VECTOR_G</td>
<td>Calculated: -</td>
<td>Dynamic index: DDS, p0180</td>
<td>Min Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dynamic index: DDS, p0180</td>
<td>P-Group: Setpoints</td>
<td>Vector group: 3_1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Function diagram: 3010</td>
<td>Not for motor type: -</td>
<td>Scaling: p2000</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access level: 2</td>
<td>Min</td>
<td>210000.000 [rpm]</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Max</td>
<td>0.000 [rpm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Dependency:**
Refer to: p1020, p1021, p1022, p1023, r1024, r1197

*Description:* Sets a value for the fixed speed / velocity setpoint.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1009[0...n]</strong></td>
<td>CO: Fixed speed setpoint 9 / n_set_fixed 9</td>
<td>Sets a value for the fixed speed / velocity setpoint 9.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>p1010[0...n]</strong></td>
<td>CO: Fixed speed setpoint 10 / n_set_fixed 10</td>
<td>Sets a value for the fixed speed / velocity setpoint 10.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>p1011[0...n]</strong></td>
<td>CO: Fixed speed setpoint 11 / n_set_fixed 11</td>
<td>Sets a value for the fixed speed / velocity setpoint 11.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td><strong>p1012[0...n]</strong></td>
<td>CO: Fixed speed setpoint 12 / n_set_fixed 12</td>
<td>Sets a value for the fixed speed / velocity setpoint 12.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1013[0...n]</td>
<td>CO: Fixed speed setpoint 13 / n_set_fixed 13</td>
<td></td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td>p1014[0...n]</td>
<td>CO: Fixed speed setpoint 14 / n_set_fixed 14</td>
<td></td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td>p1015[0...n]</td>
<td>CO: Fixed speed setpoint 15 / n_set_fixed 15</td>
<td></td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
</tbody>
</table>

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1020[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0</td>
<td></td>
<td>If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

**p1021[0...n]**
**BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Dependency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the signal source for selecting the fixed speed setpoint.</td>
<td>Selects the required fixed speed setpoint using p1020 ... p1023.</td>
<td>If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).</td>
</tr>
</tbody>
</table>

**p1022[0...n]**
**BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Dependency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the number of the actual fixed speed setpoint in r1197.</td>
<td>Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.</td>
<td>If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).</td>
</tr>
</tbody>
</table>

**p1023[0...n]**
**BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Dependency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the number of the actual fixed speed setpoint in r1197.</td>
<td>Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.</td>
<td>If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).</td>
</tr>
</tbody>
</table>

**r1024**
**CO: Fixed speed setpoint effective / n_set_fixed eff**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the selected and effective fixed speed setpoint.</td>
<td>This setpoint is the output value for the fixed speed setpoints and must be appropriately interconnected (e.g. with the main setpoint).</td>
</tr>
</tbody>
</table>
Parameters
List of parameters

Recommend: Interconnect the signal with main setpoint (p1070).

Dependency: Selects the required fixed speed setpoint using p1020 ... p1023.
Displays the number of the actual fixed speed setpoint in r1197.
Sets the values for the fixed speed setpoints 1 ... 15 using p1001 ... p1015.
Refer to: p1070, r1197

Note: If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

p1030[0...n] Motorized potentiometer configuration / Mop configuration

Can be changed: U, T
Data type: Unsigned16
P-Group: Setpoints
Not for motor type: -
Min
Max
- -

Access level: 3
Func. diagram: 3020
Unit selection: -
Expert list: 1
Factory setting
0000 0110 bin

Description: Sets the configuration for the motorized potentiometer.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Data save active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Automatic mode, ramp-function generator active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Initial rounding-off active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Save in NVRAM active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator always active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Notice: The following prerequisites must be fulfilled in order to be able to save the setpoint (Bit 03 = 1) in a non-volatile fashion:
- Firmware with V2.3 or higher.
- Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).

Note: Re bit 00:
0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p1040.
1: The setpoint for the motorized potentiometer is saved after OFF and after ON set to the saved value. In order to save in a non-volatile fashion, bit 03 should be set to 1.
Re bit 01:
0: Without ramp-function generator in the automatic mode (ramp-up/ramp-down time = 0).
1: With ramp-function generator in the automatic mode.

For manual operation (0 signal via BI: p1041), the ramp-function generator is always active.

Re bit 02:
0: Without initial rounding-off
1: With initial rounding-off. The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed).
The jerk for the initial rounding-off is independent of the ramp-up time and only depends on the selected maximum speed (p1082). It is calculated as follows:
\[ r = 0.01 \% \times \frac{p1082 \ [1/s]}{0.13^2 \ [s^2]} \]
The jerk acts up until the maximum acceleration is reached (a_max = p1082 [1/s] / p1047 [s]), and then the drive continues to run linearly with a constant rate of acceleration. The higher the maximum acceleration (the lower that p1047 is), the longer the ramp-up time increases with respect to the set ramp-up time.
Re bit 03:
0: Non-volatile data save de-activated.
1: The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for bit 00 = 1).
Re bit 04:
When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r1050.
### Description:
Sets the signal source to continually increase the setpoint for the motorized potentiometer.
The setpoint change (CO: r1050) depends on the set ramp-up time (p1047) and the duration of the signal that is present (BI: p1035).

### Dependency:
Refer to: p1036

### Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

### Description:
Sets the signal source to continuously lower the setpoint for the motorized potentiometer.
The setpoint change (CO: r1050) depends on the set ramp-down time (p1048) and the duration of the signal that is present (BI: p1036).

### Dependency:
Refer to: p1035

### Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

### Description:
Sets the maximum speed/velocity for the motorized potentiometer.
Note:
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value.

### Description:
Sets the minimum speed/velocity for the motorized potentiometer.
Note:
This parameter is automatically pre-assigned in the commissioning phase.
The setpoint output from the motorized potentiometer is limited to this value.
### List of parameters

#### p1039[0...n]  
**BI: Motorized potentiometer inversion / MotP inv**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td>Func. diagram:</td>
<td>3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source to invert the minimum speed/velocity or the maximum speed/velocity for the motorized potentiometer.

**Dependency:** Refer to: p1037, p1038

**Note:** The inversion is only active during "motorized potentiometer raise" or "motorized potentiometer lower".

#### p1040[0...n]  
**Motorized potentiometer starting value / Mop start value**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
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<tbody>
<tr>
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<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>3_1</td>
<td>Unit selection:</td>
<td>p0505</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-210000.000 [rpm]</td>
<td>Max</td>
<td>210000.000 [rpm]</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets the starting value for the motorized potentiometer. This starting value becomes effective after the drive has been powered up.

**Dependency:** Only effective if p1030.0 = 0.

Refer to: p1030

#### p1041[0...n]  
**BI: Motorized potentiometer manual/automatic / Mop manual/auto**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td>Func. diagram:</td>
<td>3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source to change over from manual to automatic when using a motorized potentiometer.

In the manual mode, the setpoint is changed using two signals - raise and lower. In the automatic mode, the setpoint must be interconnected via a connector input.

**Dependency:** Refer to: p1030, p1035, p1036, p1042

**Note:** The effectiveness of the internal ramp-function generator can be set in automatic mode.

#### p1042[0...n]  
**CI: Motorized potentiometer automatic setpoint / Mop auto setpoint**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td>Func. diagram:</td>
<td>3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>p2000</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the setpoint of the motorized potentiometer in the automatic mode.

**Dependency:** Refer to: p1041
### p1043[0...n]
**BI: Motorized potentiometer accept setting value / MotP acc set val**

**Description:** Sets the signal source to accept the setting value for the motorized potentiometer.

**Dependency:** Refer to: p1044

**Note:** The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dynamic index:** CDS, p0170
- **P-Group:** Setpoints
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:** Sets the signal source to accept the setting value for the motorized potentiometer.

**Dependency:** Refer to: p1043

**Note:** The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

### p1044[0...n]
**CI: Motorized potentiometer setting value / Mop set val**

**Description:** Sets the signal source for the setting value for the motorized potentiometer.

**Dependency:** Refer to: p1043

**Note:** The setting value (CI: p1044) becomes effective for a 0/1 edge of the setting command (BI: p1043).

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **P-Group:** Setpoints
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** p2000
- **Min:** -
- **Max:** -
- **Factory setting:** 0

### r1045
**CO: Mot. potentiometer speed setp. in front of ramp-fct. gen. / Mop n_set bef RFG**

**Description:** Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator.

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **P-Group:** Setpoints
- **Units group:** 3_1
- **Not for motor type:** -
- **Scaling:** p2000
- **Min:** -
- **Max:** -
- **Factory setting:** -

### p1047[0...n]
**Motorized potentiometer ramp-up time / Mop ramp-up time**

**Description:** Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer.

The setpoint is changed from zero up to the speed/velocity limit (p1082) within this time (if no initial rounding-off has been activated).

**Dependency:** Refer to: p1030, p1048, p1082

**Note:** When the initial rounding-off is activated (p1030.2) the ramp-up time is correspondingly extended.
**Parameters**

**List of parameters**

**p1048[0...n]**  
**Motorized potentiometer ramp-down time / Mop ramp-down time**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated:</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>1000.000 [s]</td>
<td>10.000 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer. The setpoint is changed from the speed/velocity limit (p1082) to zero within this time (if no initial rounding-off has been activated).

**Dependency:**
Refer to: p1030, p1047, p1082

**Note:**
The deceleration time is extended corresponding to the activated initial rounding-off (p1030.2).

**r1050**  
**CO: Motor. potentiometer setpoint after the ramp-function generator / Mop setp after RFG**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Calculated:</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram: 1550, 3020</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the effective setpoint after the internal motorized potentiometer ramp-function generator. This setpoint is the output value of the motorized potentiometer and must be appropriately interconnected onwards (e.g. with the main setpoint).

**Recommend.:**
Interconnect the signal with main setpoint (p1070).

**Dependency:**
Refer to: p1070

**Note:**
For "With ramp-function generator", after an OFF1, OFF2, OFF3 or for a 0 signal via BI: p0852 (inhibit operation, suppress pulses) the ramp-function generator output (r1050) is set to the starting value (configuration via p1030.0).

**p1051[0...n]**  
**CI: Speed limit RFG positive direction of rotation / n_limit RFG pos**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Calculated:</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 3050</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1083[0]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the speed limit of the positive direction on the ramp-function generator input.

**p1052[0...n]**  
**CI: Speed limit RFG negative direction of rotation / n_limit RFG neg**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Calculated:</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 3050</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1086[0]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the speed limit of the negative direction on the ramp-function generator input.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1055[0...n]</strong></td>
<td><strong>BI: Jog bit 0 / Jog bit 0</strong></td>
<td>Sets the signal source for jog 1.</td>
<td>When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.</td>
<td>The drive is enabled for jogging using BI: p1055 or BI: p1056. The command &quot;ON/OFF1&quot; can be issued using BI: p0840 or using BI: p1055/p1056. Only the signal source that was used to power up can also be used to power down again.</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>P-Group: Setpoints</td>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Dynamic index: CDS, p0170</td>
<td>Units group: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Unit selection: -</td>
<td>Expert list: 1</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1056[0...n]</strong></td>
<td><strong>BI: Jog bit 1 / Jog bit 1</strong></td>
<td>Sets the signal source for jog 2.</td>
<td>When the setting for this binector input is changed, the motor can only be switched on by means of an appropriate signal change of the source.</td>
<td>The drive is enabled for jogging using BI: p1055 or BI: p1056. The command &quot;ON/OFF1&quot; can be issued using BI: p0840 or using BI: p1055/p1056. Only the signal source that was used to power up can also be used to power down again.</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>P-Group: Setpoints</td>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Dynamic index: CDS, p0170</td>
<td>Units group: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Unit selection: -</td>
<td>Expert list: 1</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1058[0...n]</strong></td>
<td><strong>Jog 1 speed setpoint / Jog 1 n_set</strong></td>
<td>Sets the speed/velocity for jog 1. Jogging is level-triggered and allows the motor to be incrementally moved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>P-Group: Setpoints</td>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Dynamic index: DDS, p0180</td>
<td>Units group: 3_1</td>
<td>Scaling: -</td>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Unit selection: p0505</td>
<td>Expert list: 1</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1059[0...n]</strong></td>
<td><strong>Jog 2 speed setpoint / Jog 2 n_set</strong></td>
<td>Sets the speed/velocity for jog 2. Jogging is level-triggered and allows the motor to be incrementally moved.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>P-Group: Setpoints</td>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>Dynamic index: DDS, p0180</td>
<td>Units group: 3_1</td>
<td>Scaling: -</td>
<td>-210000.000 [rpm]</td>
<td>210000.000 [rpm]</td>
</tr>
<tr>
<td>Access level: 2</td>
<td>Unit selection: p0505</td>
<td>Expert list: 1</td>
<td>Factory setting</td>
<td>0.000 [rpm]</td>
</tr>
</tbody>
</table>
### p1063[0...n] Speed limit setpoint channel / n_limit_setp

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Setpoints
- **Units group:** 3_1
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.000 [rpm]
- **Max:** 210000.000 [rpm]
- **Factory setting:** 40000.000 [rpm]

**Description:** Sets the speed limit/velocity limit effective in the setpoint channel.

**Dependency:** Sets the speed limit/velocity limit effective in the setpoint channel.

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

### p1070[0...n] CI: Main setpoint / Main setp

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **P-Group:** Setpoints
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** 1024[0]

**Description:** Sets the signal source for the main setpoint.

**Examples:**
- r1024: Fixed speed setpoint effective
- r1050: Motor, potentiometer setpoint after the ramp-function generator

**Dependency:** Refer to: p1082, p1083, p1085, p1086, p1088

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

### p1071[0...n] CI: Main setpoint scaling / Main setp scal

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **P-Group:** Setpoints
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** 1

**Description:** Sets the signal source for scaling the main setpoint.

### p1075[0...n] CI: Supplementary setpoint / Suppl setp

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **P-Group:** Setpoints
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** - [rpm]
- **Max:** - [rpm]
- **Factory setting:** 0

**Description:** Sets the signal source for the supplementary setpoint.
### Dependency:
Refer to: p1076, r1077, r1078

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1076[0...n]</strong></td>
<td><strong>CI: Supplementary setpoint scaling / Suppl setp scal</strong></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Dynamic index: CDS, p0170</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Sets the signal source for scaling the supplementary setpoint.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1077</strong></td>
<td><strong>CO: Supplementary setpoint effective / Suppl setpoint eff</strong></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: p2000</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

#### Description:
Displays the effective supplementary setpoint. The value shown is the additional setpoint after scaling.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1078</strong></td>
<td><strong>CO: Total setpoint effective / Total setpoint eff</strong></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: p2000</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

#### Description:
Displays the total effective setpoint.
The value indicates the sum of the effective main setpoint and supplementary setpoint.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1080[0...n]</strong></td>
<td><strong>Minimum speed / n_min</strong></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1), T</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0.000 [rpm]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>19500.000 [rpm]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Sets the lowest possible motor speed.
This value is not undershot in operation.

#### Dependency:
Refer to: p1106

#### Notice:
The effective minimum speed is formed from p1080 and p1106.

#### Note:
The parameter value applies for both motor directions.
In exceptional cases, the motor can operate below this value (e.g. when reversing).
### List of parameters

#### p1082[0...n]

**Maximum speed / \( n_{\text{max}} \)**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th><strong>Can be changed:</strong></th>
<th>C2(1), T</th>
<th><strong>Calculated:</strong></th>
<th>CALC_MOD_ALL</th>
<th><strong>Access level:</strong></th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td><strong>Dynamic index:</strong></td>
<td>DDS, p0180</td>
<td><strong>Func. diagram:</strong></td>
<td>3020, 3050, 3060, 3070, 3095, 5300</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
<td><strong>Units group:</strong></td>
<td>3_1</td>
<td><strong>Unit selection:</strong></td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000 [rpm]</td>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td><strong>Factory setting</strong></td>
<td>1500.000 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the highest possible speed.

**Dependency:**
- For vector control (p1300 = 20 ... 23) the maximum speed is limited to \((60.0 / (8.333 \times p0115[0] \times r0313))\). This can be identified by a reduction in r1084. p1082 is not changed in this process due to the fact that the operating mode p1300 can be changed over.
- If a sine-wave filter (p0230 = 3) is parameterized as output filter, then the maximum speed is limited corresponding to the maximum permissible filter output frequency (refer to the filter data sheet). When using sine-wave filters (p0230 = 3, 4), the maximum speed r1084 is limited to 70% of the resonant frequency of the filter capacitance and the motor leakage inductance.
- For reactors and dU/dt filters, it is limited to \(150 \, \text{Hz} \times 60 / r0313\) (for chassis power units) or \(120 \, \text{Hz} \times 60 / r0313\) (for booksize power units).
- Refer to: p0115, p0230, r0313, p0322, p0324, r0336, p0532

**Notice:**
- After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.
- The parameter applies for both motor directions.

#### p1083[0...n]

**CO: Speed limit in positive direction of rotation / \( n_{\text{limit pos}} \)**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th><strong>Can be changed:</strong></th>
<th>U, T</th>
<th><strong>Calculated:</strong></th>
<th>-</th>
<th><strong>Access level:</strong></th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td><strong>Dynamic index:</strong></td>
<td>DDS, p0180</td>
<td><strong>Func. diagram:</strong></td>
<td>3050, 6732</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
<td><strong>Units group:</strong></td>
<td>3_1</td>
<td><strong>Unit selection:</strong></td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td><strong>Scaling:</strong></td>
<td>p2000</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.000 [rpm]</td>
<td><strong>Max</strong></td>
<td>210000.000 [rpm]</td>
<td><strong>Factory setting</strong></td>
<td>40000.000 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
- Sets the maximum speed for the positive direction.

**Notice:**
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
### r1084
**Description:** Displays the effective positive speed limit.
**Dependency:** Refer to: p1082, p1083, p1085

**Description:** Sets the signal source for the speed limit of the positive direction.

**Description:** Sets the speed limit for the negative direction.

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Description:** Displays the effective negative speed limit.
**Dependency:** Refer to: p1082, p1086, p1088

**Description:** Sets the signal source for the speed/velocity limit of the negative direction.

---

**r1084**
**CO: Speed limit positive effective / n_limit pos eff**

**Can be changed:** -
**Calculated:** -
**Access level:** 3
**Func. diagram:** 3050, 3095
**Dynamic index:** -
**Units group:** 3_1
**Scaling:** p2000
**Expert list:** 1
**Factory setting**

**r1085[0...n]**
**CI: Speed limit in positive direction of rotation / n_limit pos**

**Can be changed:** T
**Calculated:** -
**Access level:** 3
**Func. diagram:** 3050
**Dynamic index:** CDS, p0170
**Units group:** -
**Scaling:** p2000
**Expert list:** 1
**Factory setting** 1083[0]

**r1086[0...n]**
**CO: Speed limit in negative direction of rotation / n_limit neg**

**Can be changed:** U, T
**Calculated:** -
**Access level:** 2
**Func. diagram:** 3050
**Dynamic index:** DDS, p0180
**Units group:** 3_1
**Scaling:** p2000
**Expert list:** 1
**Factory setting** -40000.000 [rpm]

**r1087**
**CO: Speed limit negative effective / n_limit neg eff**

**Can be changed:** -
**Calculated:** -
**Access level:** 3
**Func. diagram:** 3050, 3095
**Dynamic index:** -
**Units group:** 3_1
**Scaling:** p2000
**Expert list:** 1
**Factory setting**

**p1088[0...n]**
**CI: Speed limit in negative direction of rotation / n_limit neg**

**Can be changed:** T
**Calculated:** -
**Access level:** 3
**Func. diagram:** 3050
**Dynamic index:** CDS, p0170
**Units group:** -
**Scaling:** p2000
**Expert list:** 1
**Factory setting** 1086[0]

**Description:** Sets the signal source for the speed/velocity limit of the negative direction.
Parameters

List of parameters

**Description:** Sets skip speed 1.

**Dependency:** Refer to: p1092, p1093, p1094, p1101

**Notice:** Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

**Note:** The skip (suppression) speeds can be used to prevent the effects of mechanical resonance.

**Description:** Sets skip speed 2.

**Dependency:** Refer to: p1091, p1093, p1094, p1101

**Notice:** Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

**Description:** Sets skip speed 3.

**Dependency:** Refer to: p1091, p1092, p1094, p1101

**Notice:** Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.

**Description:** Sets skip speed 4.

**Dependency:** Refer to: p1091, p1092, p1093, p1101

**Notice:** Skip bandwidths can also become ineffective as a result of the downstream limits in the setpoint channel.
**p1101[0...n]** | Skip speed bandwidth / n_skip bandwidth
---|---
Vector G | Can be changed: U, T | Calculated: - | Access level: 3

**Data type:** FloatingPoint32  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min** | 0.000 [rpm]  
**Max** | 210000.000 [rpm]  
**Units group:** 3_1  
**Scaling:** p2000  
**Unit selection:** p0505  
**Expert list:** 1  
**Func. diagram:** 3050  
**Dynamic index:** DDS, p0180  
**Data type:** DDS  
**Not for motor type:** -  
**Min** | 0.000 [rpm]  
**Max** | 210000.000 [rpm]  

**Description:** Sets the bandwidth for the skip speeds/velocities 1 to 4.

**Dependency:** Refer to: p1091, p1092, p1093, p1094

**Note:** The setpoint (reference) speeds are skipped (suppressed) in the range of the skip speed +/-p1101. Steady-state operation is not possible in the skipped (suppressed) speed range. The skip (suppression) range is skipped.

**Example:**

p1091 = 600 and p1101 = 20  
--> setpoint speeds between 580 and 620 [rpm] are skipped.

For the skip bandwidths, the following hysteresis behavior applies:

For a setpoint speed coming from below, the following applies:

r1170 < 580 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 580 [rpm]

For a setpoint speed coming from above, the following applies:

r1170 > 620 [rpm] and 580 [rpm] <= r1114 <= 620 [rpm] --> r1119 = 620 [rpm]

**p1106[0...n]** | CI: Minimum speed signal source / n_min s_src
---|---
Vector G | Can be changed: T | Calculated: - | Access level: 3

**Data type:** Unsigned32 / FloatingPoint32  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min** | -  
**Max** | -  
**Units group:** -  
**Scaling:** p2000  
**Unit selection:** -  
**Expert list:** 1  
**Func. diagram:** 3050  
**Dynamic index:** CDS, p0170  
**Data type:** CDS  
**Not for motor type:** -  
**Min** | -  
**Max** | -  

**Description:** Sets the signal source for lowest possible motor speed.

**Dependency:** Refer to: p1080

**Notice:** The effective minimum speed is formed from p1080 and p1106.

**p1110[0...n]** | BI: Inhibit negative direction / Inhib neg dir
---|---
Vector G | Can be changed: T | Calculated: - | Access level: 3

**Data type:** Unsigned32 / Binary  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min** | -  
**Max** | -  
**Units group:** -  
**Scaling:** -  
**Unit selection:** -  
**Expert list:** 1  
**Func. diagram:** 2505, 3040  
**Dynamic index:** CDS, p0170  
**Data type:** CDS  
**Not for motor type:** -  
**Min** | -  
**Max** | -  

**Description:** Sets the signal source to disable the negative direction.

**Dependency:** Refer to: p1111

**p1111[0...n]** | BI: Inhibit positive direction / Inhib pos dir
---|---
Vector G | Can be changed: T | Calculated: - | Access level: 3

**Data type:** Unsigned32 / Binary  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min** | -  
**Max** | -  
**Units group:** -  
**Scaling:** -  
**Unit selection:** -  
**Expert list:** 1  
**Func. diagram:** 2505, 3040  
**Dynamic index:** CDS, p0170  
**Data type:** CDS  
**Not for motor type:** -  
**Min** | -  
**Max** | -  

**Description:** Sets the signal source to disable the positive direction.

**Dependency:** Refer to: p1110
**Parameters**

**List of parameters**

---

**r1112**

**CO: Speed setpoint after minimum limiting / n_set aft min_lim**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 3

**Data type:** FloatingPoint32

**P-Group:** Setpoints

**Units group:** 3_1

**Scaling:** p2000

**Min:** - [rpm]

**Max:** - [rpm]

**Description:** Displays the speed setpoint after the minimum limiting.

**Dependency:** Refer to: p1091, p1092, p1093, p1094, p1101

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

---

**p1113[0...n]**

**BI: Setpoint inversion / Setp inv**

**VECTOR_G**

- Can be changed: T
- Calculated: -
- Access level: 3

**Data type:** Unsigned32 / Binary

**P-Group:** Setpoints

**Units group:** -

**Scaling:** -

**Min:** -

**Max:** -

**Not for motor type:** -

**CDS, p0170**

**Func. diagram:** 2441, 2442, 2505, 3040

**P-Group:** Setpoints

**Units group:** -

**Unit selection:** -

**Expert list:** 1

**Min Max Factory setting**

- - 0

**Description:** Sets the signal source to invert the setpoint.

**Dependency:** Refer to: r1198

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

---

**r1114**

**CO: Setpoint after the direction limiting / Setp after limit**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 3

**Data type:** FloatingPoint32

**P-Group:** Setpoints

**Units group:** 3_1

**Scaling:** p2000

**Min:** - [rpm]

**Max:** - [rpm]

**Not for motor type:** -

**Description:** Displays the speed/velocity setpoint after the changeover and limiting the direction.

**p1115**

**Ramp-function generator selection / RFG selection**

**VECTOR_G**

- Can be changed: T
- Calculated: -
- Access level: 3

**Data type:** Integer16

**P-Group:** Setpoints

**Units group:** -

**Scaling:** -

**Min:** 0

**Max:** 1

**Not for motor type:** -

**Description:** Sets the ramp-function generator type.

**Value:**

- 0: Basic ramp-function generator
- 1: Extended ramp-function generator

**Note:** Another ramp-function generator type can only be selected when the motor is at a standstill.
<table>
<thead>
<tr>
<th>r1119</th>
<th>CO: Ramp-function generator setpoint at the input / RFG setp at inp</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 1550, 1690, 3050, 3060, 3070</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Units group: 3_1 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2000 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Displays the setpoint at the input of the ramp-function generator.

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:** The setpoint is influenced by other functions, e.g. skip (suppressed) speeds, minimum and maximum limits.

<table>
<thead>
<tr>
<th>p1120[0...n]</th>
<th>Ramp-function generator ramp-up time / RFG ramp-up time</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1), U, T Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 3060, 3070</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>999999.000 [s] 10.000 [s]</td>
</tr>
</tbody>
</table>

**Description:** The ramp-function generator ramps-up the speed setpoint from standstill (setpoint = 0) up to the maximum speed (p1082) in this time.

**Dependency:** Refer to: p1082, p1138

**Note:** The ramp-up time can be scaled via connector input p1138. The parameter is adapted during the rotating measurement (p1960 > 0). This is the reason that during the rotating measurement, the motor can accelerate faster than was originally parameterized.

For U/f control and sensorless vector control (see p1300), ramp-up times of 0 s are not expedient. The setting should be based on the startup times (r0345) of the motor.

<table>
<thead>
<tr>
<th>p1121[0...n]</th>
<th>Ramp-function generator ramp-down time / RFG ramp-down time</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(1), U, T Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 3060, 3070</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>999999.000 [s] 10.000 [s]</td>
</tr>
</tbody>
</table>

**Description:** The ramp-function generator ramps-down the speed setpoint from the maximum speed (p1082) down to standstill (setpoint = 0) in this time. Further, the ramp-down time is always effective for OFF1.

**Dependency:** Refer to: p1082, p1139

**Note:** For U/f control and sensorless vector control (see p1300), ramp-down times of 0 s are not recommended. The setting should be based on the startup times (r0345) of the motor.

<table>
<thead>
<tr>
<th>p1122[0...n]</th>
<th>BI: Bypass ramp-function generator / Bypass RFG</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: CDS, p0170 Func. diagram: 2505</td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>- 0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for bypassing the ramp generator (ramp-up and ramp-down times = 0).

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:** For VECTOR in encoderless operation, it is not permissible that the ramp-function generator is bypassed.
### Parameters

#### List of parameters

**p1130[0...n]**  
**Ramp-function generator initial rounding-off time / RFG t_start_round**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0.000 [s]</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>30.000 [s]</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the initial rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.

**Note:**  
Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

**p1131[0...n]**  
**Ramp-function generator final rounding-off time / RFG t_end_delay**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0.000 [s]</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>30.000 [s]</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the final rounding-off time for the extended ramp generator. The value applies to ramp-up and ramp-down.

**Note:**  
Rounding-off times avoid an abrupt response and prevent damage to the mechanical system.

**p1134[0...n]**  
**Ramp-function generator rounding-off type / RFG round-off type**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the smoothed response to the OFF1 command or the reduced setpoint for the extended ramp-function generator.

**Value:**  
0: Cont. smoothing  
1: Discont smoothing

**Dependency:**  
No effect up to initial rounding-off time (p1130) > 0 s.

**Note:**  
If the setpoint is reduced while ramping-up, initially a final rounding-off is carried out and then the ramp-up completed. During the final rounding-off, the output of the ramp-function generator continues to go in the direction of the previous setpoint (overshoot). After the final rounding-off has been completed, the output goes toward the new setpoint.

p1134 = 0 (continuous smoothing)  
If the setpoint is reduced while ramping-up, the output goes immediately in the direction of the new setpoint. For the setpoint change there is no rounding-off.

**p1135[0...n]**  
**OFF3 ramp-down time / OFF3 t_RD**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(1), U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Setpoints</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0.000 [s]</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>600.000 [s]</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>3.000 [s]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the ramp-down time from the maximum speed down to zero speed for the OFF3 command.

**Note:**  
This time can be exceeded if the DC link voltage reaches its maximum value.
### List of parameters

#### Description:
Sets the initial rounding-off time for OFF3 for the extended ramp generator.

#### Access level: 2

#### Data type: FloatingPoint32

#### Dynamic index: DDS, p0180

#### P-Group: Setpoints

#### Units group: -

#### Not for motor type: -

#### Scaling: -

#### Min: 0.000 [s]

#### Max: 30.000 [s]

#### Factory setting: 0.000 [s]

<table>
<thead>
<tr>
<th>p1136[0...n]</th>
<th>OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sets the initial rounding-off time for OFF3 for the extended ramp generator.</td>
</tr>
<tr>
<td>Access level</td>
<td>2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>30.000 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

#### Description:
Sets the final rounding-off time for OFF3 for the extended ramp generator.

#### Access level: 2

#### Data type: FloatingPoint32

#### Dynamic index: DDS, p0180

#### P-Group: Setpoints

#### Units group: -

#### Not for motor type: -

#### Scaling: -

#### Min: 0.000 [s]

#### Max: 30.000 [s]

#### Factory setting: 0.000 [s]

<table>
<thead>
<tr>
<th>p1137[0...n]</th>
<th>OFF3 final rounding-off time / RFG OFF3 t_end_del</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sets the final rounding-off time for OFF3 for the extended ramp generator.</td>
</tr>
<tr>
<td>Access level</td>
<td>2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>30.000 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [s]</td>
</tr>
</tbody>
</table>

#### Description:
Sets the signal source for scaling the up ramp.

#### Dependency: Refer to: p1120

#### Note: The ramp-up time is set in p1120.

#### Access level: 3

#### Data type: Unsigned32 / FloatingPoint32

#### Dynamic index: CDS, p0170

#### P-Group: Setpoints

#### Units group: -

#### Not for motor type: -

#### Scaling: PERCENT

#### Min: -

#### Max: 1

<table>
<thead>
<tr>
<th>p1138[0...n]</th>
<th>CI: Up ramp scaling / Up ramp scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sets the signal source for scaling the up ramp.</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p1120</td>
</tr>
<tr>
<td>Note</td>
<td>The ramp-up time is set in p1120.</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32 / FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>P-Group</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Description:
Sets the signal source for scaling the down ramp.

#### Dependency: Refer to: p1121

#### Note: The ramp-down time is set in p1121.

#### Access level: 3

#### Data type: Unsigned32 / Binary

#### Dynamic index: CDS, p0170

#### P-Group: Setpoints

#### Units group: -

#### Not for motor type: -

#### Scaling: -

#### Min: -

#### Max: 1

<table>
<thead>
<tr>
<th>p1139[0...n]</th>
<th>CI: Down ramp scaling / Down ramp scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Sets the signal source for scaling the down ramp.</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p1121</td>
</tr>
<tr>
<td>Note</td>
<td>The ramp-down time is set in p1121.</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>P-Group</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Description:
Sets the signal source for the command "enable ramp-function generator/inhibit ramp-function generator".

For the PROFIdrive profile, this command corresponds to control word 1 bit 4 (STW1.4).

BI: p1140 = 0 signal:
Inhibits the ramp-function generator (the ramp-function generator output is set to zero).
### BI: p1140 = 1 signal:
Ramp-function generator enable.

**Dependency:**
Refer to: p1141, p1142

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

![Caution Icon]

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

<table>
<thead>
<tr>
<th>p1141[0...n]</th>
<th>BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the command "continue ramp-function generator/freeze ramp-function generator".

For the PROFIdrive profile, this command corresponds to control word 1 bit 5 (STW1.5).

BI: p1141 = 0 signal:
Freezes the ramp-function generator.

BI: p1141 = 1 signal:
Continue ramp-function generator.

**Dependency:**
Refer to: p1140, p1142

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

![Caution Icon]

**Notice:**
The ramp-function generator is, independent of the state of the signal source, active in the following cases:
- OFF1/OFF3.
- ramp-function generator output within the suppression bandwidth.
- ramp-function generator output below the minimum speed.

<table>
<thead>
<tr>
<th>p1142[0...n]</th>
<th>BI: Enable setpoint/inhibit setpoint / Setpoint enable</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Setpoints</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the command "enable setpoint/inhibit setpoint".

For the PROFIdrive profile, this command corresponds to control word 1 bit 6 (STW1.6).

BI: p1142 = 0 signal
Inhibits the setpoint (the ramp-function generator input is set to zero).

BI: p1142 = 1 signal
Setpoint enable.

**Dependency:**
Refer to: p1140, p1141

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

![Caution Icon]

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
When the function module "position control" (r0108.3 = 1) is activated, this binector input is interconnected as follows as standard:
BI: p1142 = 0 signal
**p1143[0...n]**  
**BI: Ramp-function generator, accept setting value / RFG accept set v**

- **VECTOR_G**
- **Can be changed:** T
- **Calculated:**
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dynamic index:** CDS, p0170
- **Units group:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Scaling:** -
- **Factory setting:** 0

**Description:**
Sets the signal source for accepting the setting value of the ramp-function generator.

**Dependency:**
The signal source for accepting the setting value is set using parameters.

**Refer to:** p1144

**Note:**
- **0/1 signal:**
  - The ramp-function generator output is immediately (without delay) set to the setting value of the ramp-function generator.
- **1 signal:**
  - The setting value of the ramp-function generator is effective.
- **1/0 signal:**
  - The input value of the ramp-function generator is effective. The ramp-function generator output is adapted to the input value using the ramp-up time or the ramp-down time.
- **0 signal:**
  - The input value of the ramp-function generator is effective.

**p1144[0...n]**  
**CI: Ramp-function generator setting value / RFG setting value**

- **VECTOR_G**
- **Can be changed:** U, T
- **Calculated:**
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **Units group:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Scaling:** p2000
- **Factory setting:** 0

**Description:**
Sets the signal source for the ramp-function generator setting value.

**Dependency:**
The signal source for accepting the setting value is set using parameters.

**Refer to:** p1143

**p1145[0...n]**  
**Ramp-function generator tracking intensity. / RFG track intens**

- **VECTOR_G**
- **Can be changed:** U, T
- **Calculated:** CALC_MOD_ALL
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Units group:** -
- **Expert list:** 1
- **Min:** 0.0
- **Max:** 50.0
- **Scaling:** -
- **Factory setting:** 1.3

**Description:**
Sets the ramp-function generator tracking.

The output value of the ramp-function generator is tracked (corrected) corresponding to the maximum possible drive acceleration. The reference value is the deviation at the speed/velocity controller input that is necessary to ensure that the motor accelerates at the torque/force limit.

**Recommend.:**
- **p1145 = 0.0:**
  - This value de-activates the ramp-function generator tracking.
  - **p1145 = 0.0 ... 1.0:**
    - Generally, these values are not practical. They cause the motor to accelerate below its torque limit. The lower the selected value, the greater the margin between the controller and torque limit when accelerating.
  - **p1145 > 1.0:**
    - The greater the value, the higher the permissible deviation between the speed setpoint and speed actual value.
**Notice:**
If ramp-function generator tracking is activated and the ramp time is set too short, this can cause unsteady acceleration.

Remedy:
- switch off ramp-function generator tracking (p1145 = 0).
- increase the ramp-up/ramp-down time (p1120, p1121).

**Note:**
In the U/f mode, ramp-function generator tracking is not active.

For SERVO with U/f operation, the following applies:
The complete ramp-function generator is not active, i.e. ramp-up and ramp-down time = 0.

---

**p1148[0...n]**  
**Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act**

**Data type:** FloatingPoint32  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min:** 0.000 [rpm]  
**Max:** 1000.000 [rpm]  
**Factory setting:** 19.800 [rpm]

**Description:**
Sets the tolerance value for the status of the ramp-function generator (ramp-up active, ramp-down active).
If the input of the ramp-function generator does not change in comparison to the output by more than the entered tolerance time, then the status bits "ramp-up active" and "ramp-down active" are not influenced.

**Dependency:**
Refer to: r1199

---

**r1149**  
**CO:** Ramp-function generator, acceleration / RFG acceleration

**Data type:** FloatingPoint32  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min:** - [rev/s²]  
**Max:** - [rev/s²]

**Description:**
Displays the acceleration of the ramp-function generator.

**Dependency:**
Refer to: p1145

---

**r1150**  
**CO:** Ramp-function generator speed setpoint at the output / RFG n_set at outp

**Data type:** FloatingPoint32  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min:** - [rpm]  
**Max:** - [rpm]

**Description:**
Displays the setpoint at the output of the ramp-function generator.

---

**p1151[0...n]**  
**Ramp-function generator configuration / RFG config**

**Data type:** Unsigned16  
**P-Group:** Setpoints  
**Not for motor type:** -  
**Min:** -  

**Description:**
Sets the configuration for the extended ramp-function generator.

**Bit field:**
- **Bit:** 00  
- **Signal name:** Disable rounding-off at the zero cross-over  
- **1 signal:** Yes  
- **0 signal:** No  
- **FP:** 3070

**Caution:**
Re bit 00 = 1:
If the ramp-up time is longer than the ramp-down time (p1120 > p1121), then there is an acceleration step at the zero crossover. This can have a negative impact on the mechanical system.
### Note:
Re bit 00 = 1:
When the direction change is changed there is no rounding-off before and after the zero crossover.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Expert list</th>
<th>Factory setting</th>
<th>Default setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1152</td>
<td>BI: Setpoint 2 enable / Setp 2 enab</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>899.15</td>
<td></td>
</tr>
<tr>
<td>p1155[0...n]</td>
<td>Cl: Speed controller speed setpoint 1 / n_ctrl n_set 1</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>p1160[0...n]</td>
<td>Cl: Speed controller speed setpoint 2 / n_ctrl n_set 2</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>r1169</td>
<td>CO: Speed controller, speed setpoints 1 and 2 / n_ctrl n_set 1/2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>p0505</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

The ramp-function generator is set (SERVO: to the actual value, VECTOR: To the setpoint (r1170)) and stops the drive corresponding to the ramp-downtime (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

When the function module "position control" (r0108.3 = 1) is activated, this connector input is interconnected as follows as standard:

Cl: p1160 = r2562

### Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

### Dependency:
The effectiveness of this setpoint depends on, e.g. STW1.4 and STW1.6.

Refer to: r0002, p0840, p0844, p0848, p0852, p0854, r0898, p1140, p1142, p1160, r1170, p1189

### Note:
For OFF1/OFF3, the ramp-function generator ramp is effective.

The ramp-function generator is set (SERVO: to the actual value, VECTOR: To the setpoint (r1170)) and stops the drive corresponding to the ramp-downtime (p1121 or p1135). While stopping via the ramp-function generator, STW1.4 is effective (enable ramp-function generator).

When the function module "position control" (r0108.3 = 1) is activated, this connector input is interconnected as follows as standard:

Cl: p1160 = r2562

### Notice:
The value is only correctly displayed at r0899.2 = 1 (operation enabled).
Parameters

List of parameters

**r1170**

**CO: Speed controller, setpoint sum / n_ctrl setp sum**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>-</td>
<td>1550, 1590, 1690, 1700, 1750, 3080, 5020, 6030</td>
</tr>
</tbody>
</table>

P-Group: Setpoints
Units group: 3_1
Not for motor type: -
Scaling: p2000
Expert list: 1
Min - [rpm]
Max - [rpm]

Description: Displays the speed setpoint after selecting the ramp-function generator and adding the speed setpoint 1 (p1155) and speed setpoint 2 (p1160).

Dependency: Refer to: r1150, p1155, p1160

**p1189[0...n]**

**Speed setpoint configuration / n_ctrl config**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned16</td>
<td>DDS, p0180</td>
<td>3080</td>
</tr>
</tbody>
</table>

P-Group: Setpoints
Units group: -
Not for motor type: -
Scaling: -
Expert list: 1
Min -
Max -

Description: Sets the configuration for the speed setpoint.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Interpolation ramp-fct gen/speed controller active</td>
<td>Yes</td>
<td>No</td>
<td>3080</td>
</tr>
<tr>
<td>01</td>
<td>Interpol. op-loop ctrl/speed controller active</td>
<td>Yes</td>
<td>No</td>
<td>3080</td>
</tr>
</tbody>
</table>

Note:
Re bit 01: The interpolator is only effective in following cases:
- isochronous PROFIBUS operation with a sign-of-life received from the master (STW2.12 ... STW2.15).

**r1197**

**Fixed speed setpoint number actual / n_set_fixed No act**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned32</td>
<td>-</td>
<td>3010</td>
</tr>
</tbody>
</table>

P-Group: Setpoints
Units group: -
Not for motor type: -
Scaling: -
Expert list: 1
Min -
Max -

Description: Displays the number of the selected fixed speed/velocity setpoint.

Dependency: Refer to: p1020, p1021, p1022, p1023

Note:
If a fixed speed setpoint has not been selected (p1020 ... p1023 = 0, r1197 = 0), then r1024 = 0 (setpoint = 0).

**r1198.0...15**

**CO/BO: Control word setpoint channel / STW setpoint chan**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned16</td>
<td>-</td>
<td>1530, 2505</td>
</tr>
</tbody>
</table>

P-Group: Setpoints
Units group: -
Not for motor type: -
Scaling: -
Expert list: 1
Min -
Max -

Description: Displays the control word for the setpoint channel.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fixed setp bit 0</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>01</td>
<td>Fixed setp bit 1</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>02</td>
<td>Fixed setp bit 2</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
<tr>
<td>03</td>
<td>Fixed setp bit 3</td>
<td>Yes</td>
<td>No</td>
<td>3010</td>
</tr>
</tbody>
</table>
### List of parameters

#### r1199.0...8

**CO/BO: Ramp-function generator status word / RFG ZSW**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Ramp-up active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ramp-down active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>RFG active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Ramp-function generator set</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator held</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Ramp-function generator tracking active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Maximum limit active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Ramp-function generator, acceleration positive</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Ramp-function generator, acceleration negative</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status word for the ramp-function generator (RFG).

**Note:**
- Bit 02:
  - The bit is an OR logic operation - bit 00 and bit 01.

#### p1200[0...n]

**Flying restart operating mode / FlyRest op_mode**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the operating mode for flying restart.

**Value:**
- 0: Flying restart inactive
- 1: Flying restart always active (start in setpoint direction)
- 2: Flying restart active after on, fault, OFF2 (start in setpt. dir.)
- 3: Flying restart active after fault, OFF2 (start in setp. direction)
- 4: Flying restart always active (start only in setpoint direction)
- 5: Flying restart active after on, fault, OFF2 (start only in setp_dir)
- 6: Flying restart active after fault, OFF2 (start only in setpt. dir.)

**Dependency:**
For induction motors, the following applies:

A differentiation is made between flying restart for U/f control and for vector control (p1300).

Flying restart, U/f control: p1202, p1203, r1204
Flying restart, vector control: p1202, p1203, r1205

For synchronous motors, the following applies:

Flying restart is not possible with U/f control or if, in the case of sensorless vector control, a Voltage Sensing Module (VSM) has not been connected and parameterized.
If two VSMs are connected to the Motor Module, then the motor voltage for the flying restart is measured using the second VSM (see p0151[1]).

If only one VSM is connected, then this can be used for the flying restart.

Refer to: p1201
Refer to: F07330, F07331

Notice:
The "flying restart" function must be used in cases where the motor may still be running (e.g. after a brief line supply interruption) or is being driven by the load. The system might otherwise shut down as a result of overcurrent.

It does not make sense to use "flying restart" together with the "motor holding brake function" (p1215 > 0) because then the flying restart will always be realized with the motor stationary.

Note:
For p1200 = 1, 4, the following applies:
Flying restart is active after faults, OFF1, OFF2, OFF3.
For p1200 = 2, 5, the following applies:
The "power-on" is the first power-on operation after the drive system has been booted. This is practical for motors with a high-inertia load.
For p1200 = 1, 2, 3, the following applies: The search is made in both directions.
For p1200 = 4, 5, 6, the following applies: The search is only made in the setpoint direction. For a setpoint of zero, a search is not made in the negative direction of rotation.
For operation with encoder, the following applies:
p1200 = 1, 4 as well as p1200 = 2, 5 and p1200 = 3, 6 have the same meaning.
For U/f control (p1300 < 20), the following applies:
The speed can only be sensed for values above approx. 5 % of the rated motor speed. For lower speeds, it is assumed that the motor is at a standstill.

If p1200 is changed while commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1200 have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).

### p1201[0...n]
**BI: Flying restart enable signal source / Fly_res enab S_src**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to enable the "flying restart" function.

**Dependency:**
Refer to: p1200

**Note:**
Withdrawal of the enable signal has the same effect as setting p1200 = 0.

### p1202[0...n]
**Flying restart search current / FlyRest I_srch**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>100 [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the search current for the "flying restart" function.
The value is referred to the motor magnetizing current.

**Dependency:**
Refer to: r0331

**Caution:**
An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion.

**Note:**
In U/f control mode, the parameter serves as a threshold value for establishing the current at the beginning of the flying restart function. When the threshold value is reached, the prevailing search current is set dependent upon the frequency on the basis of voltage inputs.
Reducing the search current can also improve flying restart performance (if the system moment of inertia is not very high, for example).

### p1203[0...n] Flying restart search rate factor / FlyRst_v_Srch Fact

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Func. diagram:** -  
**P-Group:** Functions  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** 10 [%]  
**Max:** 4000 [%]  
**Factory setting:** 100 [%]

**Description:**
Sets the factor for the search speed for flying restart. The value influences the rate at which the output frequency is changed during a flying restart. A higher value results in a longer search time.

**Recommend.:**
For encoderless vector control and motor cables longer than 200 m, set the factor p1203 >= 300 %.

**Caution:**
An unfavorable parameter value can result in the motor behaving in an uncontrollable fashion. For vector control, a value that is too low or too high can cause flying restart to become unstable.

**Note:**
The parameter factory setting is selected so that standard induction motors that are rotating can be found and restarted as quickly as possible (fast flying restart). With this pre-setting, if the motor is not found (e.g. for motors that are accelerated as a result of active loads or with U/f control and low speeds), we recommend that the search rate is reduced (by increasing p1203).

### r1204.0...13 CO/BO: Flying restart, U/f control status / FlyRest Uf st

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>Access level: 4</th>
</tr>
</thead>
</table>

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Functions  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** -  
**Max:** -  

**Description:**
Displays the status for checking and monitoring flying restart states in the U/f control mode.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Current impressed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>No current flow</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Voltage input</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Voltage reduced</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Start ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Wait for execution</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Slope filter act</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Positive gradient</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Current &lt; thresh</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Current minimum</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Search in the positive direction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Stop after positive direction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Stop after negative direction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>No result</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r1205.0...15 CO/BO: Flying restart, vector control status / FlyRest vector st

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>Access level: 4</th>
</tr>
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**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Functions  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** -  
**Max** -  

**Description:**
Displays the status for checking and monitoring flying restart states in the vector control mode.
Note:
Re bit 00 ... 09:
Used to control internal sequences during the flying restart.
Depending on the motor type (p0300), the number of active bits differs.
Re bits 10 ... 15:
Are used to monitor the flying restart sequence.
For permanent-magnet synchronous motors (PEM) only bits 10, 11 and 15 are supported.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>Speed adaptation circuit record angle</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td></td>
<td>Speed adaptation circuit set gain to 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Isd channel enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Speed control switched out</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td></td>
<td>Quadrature arm switched in</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td></td>
<td>Special transformation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Speed adaptation circuit set I comp to 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td></td>
<td>Current control on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td></td>
<td>Isd_set = 0 A</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td></td>
<td>Frequency held</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Search in the positive direction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>Search Started</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Current impressed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Search interrupted</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Speed adaptation circuit deviation = 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Speed control activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
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</table>

p1206[0...9] Faults without automatic restart / F w/out auto AR
B_INF, VECTOR_G
Can be changed: U, T
Data type: Unsigned16
P-Group: Functions
Not for motor type: -
Min
Max
Factory setting
Access level: 3
Dynamic index: -
Units group: -
Scaling: -
Expert list: 1

Description:
Sets faults for which automatic restart should not be effective.
Dependency:
The setting is only effective for p1210 = 6, 16.
Refer to: p1210

p1207 BI: AR connection following drive object / AR connection DO
B_INF
Can be changed: U, T
Data type: Unsigned32 / Binary
P-Group: Functions
Not for motor type: -
Min
Max
Factory setting
Access level: 3
Dynamic index: -
Units group: -
Scaling: -
Expert list: 1

Description:
Modifies the pre-charging monitoring of the infeed.
The active automatic restart (AR) of the following drive object can be interconnected using this binector input (BI: p1207 = r1214.2).
This means that when the automatic restart is operational, the pre-charging monitoring of the infeed is de-activated and is only re-activated under the following conditions:
- the absolute current in the DC link is greater than 2 % of the maximum current (r0209) of the infeed to provide protection against short-circuit in the DC link.
- if a Voltage Sensing Module (VSM) is being used, the line supply voltage amplitude is greater than 3 % of the parameterized unit supply voltage (p0210) to protect the pre-charging resistors against continuous filter current when the line supply partially returns.
Dependency:
Refer to: r0209, p0210, r1214
### List of parameters

#### p1208[0...1]

**BI: AR modification infeed / AR modification**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Binary</td>
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<td>Func. diagram: -</td>
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<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to modify the automatic restart (AR).

**Interconnections between the automatic restart and infeed:**
With the following interconnection in the mode p1210 = 6, the automatic restart can respond to infeed faults:
BI: p1208[0] = r2139.3

With the following interconnection, in the mode p1210 = 4, the automatic restart can respond to line supply failure of the infeed:
BI: p1208[1] = r0863.2

**Index:**

- [0] = Infeed fault
- [1] = Infeed line supply failure

**Dependency:**
Refer to: r0863, r2139

#### p1210

**Automatic restart, mode / AR mode**

<table>
<thead>
<tr>
<th>B_INF</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
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</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
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<td>Func. diagram: -</td>
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<tr>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>0</td>
<td>6</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the automatic restart mode (AR).

**Value:**

- 0: Inhibit automatic restart
- 1: Acknowledge all faults without restarting
- 4: Restart after line supply failure w/o additional start attempts
- 6: Restart after fault with additional start attempts

**Dependency:**
The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Advanced Operator Panel (AOP) in the LOCAL Mode, then there is no automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

**Danger:**
If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is powered up as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic power-up sequence can only be interrupted by withdrawing the ON command.

**Caution:**
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). For p1210 > 1, the infeed is automatically started.

**Note:**
When automatic restart mode is activated, the supply voltage must remain connected (e.g. backed up by UPS).

Re p1210 = 1:
Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgement, then these are also automatically acknowledged again. A minimum time of p1212 + 1 s must expire between a successful fault acknowledgement and a fault re-occurring if the signal ON/OFF1 (STW1.0) is at a HIGH signal level. If the signal ON/OFF1 is at a LOW signal level, then the time between a successful fault acknowledgement and a new fault must be at least 1 s. p1211 has no influence on the number of acknowledgement attempts.

Re p1210 = 4:
An automatic restart is only executed if fault F06200 has occurred. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.
Re p1210 = 6:
An automatic restart is carried out if any fault has occurred.

<table>
<thead>
<tr>
<th>p1210</th>
<th>Automatic restart, mode / AR mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Scaling: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Factory setting</td>
</tr>
<tr>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

Description: Sets the automatic restart mode (AR).

Value:
0: Inhibit automatic restart
1: Acknowledge all faults without restarting
4: Restart after line supply failure w/o additional start attempts
6: Restart after fault with additional start attempts
14: Restart after line supply failure following man. acknowledgment
16: Restart after fault following manual acknowledgment

Recommend.: For brief line supply failures, the motor shaft may still be rotating when restarting. The "flying restart" function (p1200) might need to be activated to restart while the motor shaft is still rotating.

Dependency: The automatic restart requires an active ON command (e.g., via a digital input). If, for p1210 > 1, there is no active ON command, then the automatic restart is interrupted.

When using an Operator Panel in the LOCAL mode, then there is no automatic start.

For p1210 = 14, 16, a manual acknowledgement is required for an automatic restart.

Refer to: p0840, p0857, p1267

Refer to: F30003

Danger: If the automatic restart is activated (p1210 > 1) if there is an ON command (refer to p0840), the drive is powered up as soon as any fault messages that are present can be acknowledged. This also occurs after the line supply returns or the Control Unit boots if the DC link voltage is again present or the feedback of the line supply infeed (refer to p0864) is again available. This automatic power-up sequence can only be interrupted by withdrawing the ON command.

Caution: A change is only accepted and made in the state “initialization” (r1214.0) and “wait for alarm” (r1214.1). When faults are present, therefore, the parameter cannot be changed.

For p1210 > 1, the motor is automatically started.

Note: When automatic restart mode is activated, the supply voltage must remain connected (e.g. backed up by UPS).

Re p1210 = 1:
Faults that are present are automatically acknowledged. If new faults occur after a successful fault acknowledgment, then these are also automatically acknowledged again. p1211 has no influence on the number of acknowledgment attempts.

Re p1210 = 4:
An automatic restart is only carried out if fault F30003 occurred at the Motor Module or a 1 signal is present at binector input p1208[1]. If additional faults are present, then these faults are also acknowledged and when successful, starting continues. If the 24 V Control Unit power supply fails, then this is interpreted as a line supply failure.

Re p1210 = 6:
An automatic restart is carried out if any fault has occurred or there is a 1 signal at binector input p1208[0].

Re p1210 = 14:
As for p1210 = 4. However, faults that are present must be manually acknowledged.

Re p1210 = 16:
As for p1210 = 6. However, faults that are present must be manually acknowledged.
# p1211 Automatic restart, start attempts / AR start attempts

| Description: | Sets the start attempts of the automatic restart function for p1210 = 4, 6. |
| Dependency: | The setting of this parameter is always effective for p1210 = 6. For p1210 = 4, the parameter only has an influence if an additional line phase failure (F6200) occurs at the start attempt. Refer to: p1210, r1214 |
| Caution: | A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). Notice: After fault F07320 occurs, the power-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated. After a complete power failure the start counter always starts with the counter value that applied before the power failure, and decrements this start attempt by 1. If a further attempt to acknowledge is started by the automatic restart function prior to power failure, e.g. when the CU remains active on power failure longer than the time p1212 / 2, the fault counter will already have been decremented once. In this case, the start counter is thus decreased by the value 2. |
| Note: | A start attempt starts immediately when a fault occurs. The restart attempt is considered to have been completed if the infeed is powered up and an additional delay time of 1 s has expired. As long as a fault is present, an acknowledgement command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgement starts again from the beginning. Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached. After a successful start attempt (i.e. a fault/error has no longer occurred up to the end of the power-up operation) the start counter is again reset to the parameter value after 1 s. If faults re-occur, the parameterized number of start attempts is again available. At least one start attempt is always carried out. After a line supply failure, acknowledgement is immediate and when the line supply returns, the system is powered up. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgement also affects the start counter to be decremented. |

### Parameters

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>p1211</td>
<td>Automatic restart, start attempts / AR start attempts</td>
<td></td>
</tr>
<tr>
<td>B_INF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated:</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
<td>3</td>
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</tbody>
</table>

---

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>p1211</td>
<td>Automatic restart, start attempts / AR start attempts</td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
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<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated:</td>
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<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
<td>3</td>
</tr>
</tbody>
</table>

---
Note: A start attempt starts immediately when a fault occurs. The start attempt is considered to have been completed if the motor was magnetized (r0056.4 = 1) and an additional delay time of 1 s has expired.

As long as a fault is present, an acknowledge command is generated in the time intervals of p1212 / 2. When successfully acknowledged, the start counter is decremented. If, after this, a fault re-occurs before a restart has been completed, then acknowledgement starts again from the beginning.

Fault F07320 is output if, after several faults occur, the number of parameterized start attempts has been reached. After a successful start attempt, i.e. a fault/error has no longer occurred up to the end of the magnetizing phase, the start counter is again reset to the parameter value after 1 s. If a fault re-occurs - the parameterized number of start attempts is again available.

At least one start attempt is always carried out.

After a line supply failure, acknowledgement is immediate and when the line supply returns, the system is powered up. If, between successfully acknowledging the line fault and the line supply returning, another fault occurs, then its acknowledgement also causes the start counter to be decremented.

### p1212 Automatic restart, delay time start attempts / AR t_wait start

| Description: | Sets the delay time up to restart. |
| Dependency: | This parameter setting is active for p1210 = 4, 6. |
| Caution: | A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). |
| Note: | The faults are automatically acknowledged and the system is powered up again after half of the delay time has expired and after the full delay time has expired. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.1 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>1000.0 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1.0 [s]</td>
</tr>
</tbody>
</table>

### p1212 Automatic restart, delay time start attempts / AR t_wait start

| Description: | Sets the delay time up to restart. |
| Dependency: | This parameter setting is active for p1210 = 4, 6. |
| Caution: | A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1). |
| Note: | The faults are automatically acknowledged and the system is powered up again after half of the delay time has expired and after the full delay time has expired. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.1 [s]</td>
</tr>
<tr>
<td>Max</td>
<td>1000.0 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1.0 [s]</td>
</tr>
</tbody>
</table>
**p1213[0...1]**  
**Automatic restart, monitoring time / AR t_monit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Caution</th>
<th>Notice</th>
<th>Note</th>
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<td></td>
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<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
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<td><strong>Data type:</strong></td>
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<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
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<td><strong>P-Group:</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>Automatic restart, monitoring time / AR t_monit</strong></td>
</tr>
</tbody>
</table>

**Description:**  
Sets the monitoring time of the automatic restart (AR).

**Index:**  
- [0] = Restart  
- [1] = Reset start counter

**Dependency:**  
Refer to: p1210, r1214

**Caution:**  
A change is only accepted and made in the state "initialization" (r1214.0) and "wait for alarm" (r1214.1).

**Notice:**  
After fault F07320 occurs, the power-on command must be withdrawn and all of the faults acknowledged so that the automatic restart function is re-activated.

**Note:**  
1. **Index 0:**  
The monitoring time starts when the faults are detected. If the automatic acknowledgements are not successful, the monitoring time runs again. If the drive has not restarted at the end of the monitoring time, fault F07320 is signaled. The monitoring is de-activated with p1213 = 0. If p1213 is set to a value which is lower than in p1212, fault F07320 is generated at each restart. If, for p1210 = 1, the time in p1213 is set lower than in p1212, then fault F07320 is also generated at each restart. The monitoring time must be extended if the faults that occur cannot be immediately and successfully acknowledged (e.g. for faults that are permanently present).

2. **Index 1:**  
The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgement without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots. The start counter is set to p1211, if F07320 occurred, the power-on command is withdrawn and the fault is acknowledged. The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.
Index 1:
The start counter (refer to r1214) is only set back to the starting value p1211 if, after successful restart, the time in p1213[1] has expired. The delay time is not effective for fault acknowledgement without automatic restart (p1210 = 1). After a power failure (blackout) the delay time only starts after the line supply returns and the Control Unit boots. The start counter is set to p1211, if F07320 occurred, the power-on command is withdrawn and the fault is acknowledged.
The start counter is immediately updated if the starting value p1211 or the mode p1210 is changed.

<p>| Description: | Displays the status of the automatic restart (AR). |</p>
<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Initialization</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Wait for alarm</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Auto restart act</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Setting the acknowledgement command</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Acknowledge alarms</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Restart</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Delay time running after automatic power-up</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Effective fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Start count. bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Start count. bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Start count. bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Start count. bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Note:
Re bit 00:
State to display the single initialization after POWER ON.
Re bit 01:
State in which the automatic restart function waits for faults (initial state).
Re bit 02:
General display that a fault has been identified and that the restart or acknowledgement has been initiated.
Re bit 03:
Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.
Re bit 04:
State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgement. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgement command (bit 3 = 1).
Re bit 05:
State in which the drive is automatically powered up (only for p1210 = 4, 6).
Re bit 06:
State in which the system waits after having been powered up, to the end of the start attempt. For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.
Re bit 07:
State which is assumed after a fault occurs within the automatic restart function.
Re bits 12 ... 15:
Actual state of the start counter (binary coded).
### Description:
Displays the status of the automatic restart (AR).

### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Initialization</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Wait for alarm</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Auto restart act</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Setting the acknowledgement command</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Acknowledge alarms</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Restart</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Delay time running after automatic power-up</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Effective fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Start count. bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Start count. bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Start count. bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Start count. bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### Note:
- Re bit 00: State to display the single initialization after POWER ON.
- Re bit 01: State in which the automatic restart function waits for faults (initial state).
- Re bit 02: General display that a fault has been identified and that the restart or acknowledgement has been initiated.
- Re bit 03: Displays the acknowledge command within the "acknowledge alarms" state (bit 4 = 1). For bit 5 = 1 or bit 6 = 1, the acknowledge command is continually displayed.
- Re bit 04: State in which the faults that are present are acknowledged. The state is exited again after successful acknowledgement. A change is only made into the next state if it is signaled that a fault is no longer present after an acknowledgement command (bit 3 = 1).
- Re bit 05: State in which the drive is automatically powered up (only for p1210 = 4, 6).
- Re bit 06: State in which the system waits after having been powered up, to the end of the start attempt (to the end of the magnetizing process).
- For p1210 = 1, this signal is directly set after the faults have been successfully acknowledged.
- Re bit 07: State which is assumed after a fault occurs within the automatic restart function. This is only reset after acknowledging the fault and withdrawing the power-on command.
- Re bit 10: When the automatic restart function is active, r1214 bit 7 is displayed, otherwise the effective fault r2139 bit 3.
- Re bits 12 ... 15: Actual state of the start counter (binary coded).
### p1215 Motor holding brake configuration / Brake config

**VECTOR_G**

- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Functions
- **Not for motor type:** -
- **Access level:** 2
- **Func. diagram:** 2701, 2707, 2711

**Description:**
Sets the holding brake configuration.

**Value:**
- 0: No motor holding brake available
- 1: Motor holding brake acc. to sequence control
- 2: Motor holding brake always open
- 3: Motor holding brake like sequence control, connection via BICO

**Dependency:**
Refer to: p1216, p1217, p1226, p1227, p1228, p1278

**Caution:**
For the setting p1215 = 0, if a brake is used, it remains closed. If the motor moves, this will destroy the brake.

**Notice:**
If p1215 was set to 1 or if p1215 was set to 3, then when the pulses are suppressed, the brake is closed even if the motor is still rotating. Pulse suppression can either be caused by a 0 signal at p0844, p0845 or p0852 or as a result of a fault with OFF2 response. If this is not desirable (e.g. for a flying restart), then the brake can be kept open using a 1 signal at p0855.

**Note:**
If the configuration is set to "no holding brake present" when booting, then the motor holding brake will be automatically identified. If a motor holding brake is detected, the configuration is set to "motor holding brake as for sequence control".

If a motor holding brake is used via the brake connection of the Motor Module integrated in the drive, then it is not permissible that p1215 is set to 3.

If an external motor holding brake is being used, then p1215 should be set to 3 and r0899.12 should be interconnected as control signal.

When the function module "extended brake control" is activated (r0108.14 = 1), r1229.1 should be interconnected as control signal.

The parameter can only be set to zero when the pulses are inhibited.

The parameterization "no motor holding brake available" and "Safe Brake Control" enabled (p1215 = 0, p9602 = 1, p9802 = 1) is not practical if there is no motor holding brake.

The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical.

### p1216 Motor holding brake, opening time / Brake t_open

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Functions
- **Not for motor type:** -
- **Access level:** 2
- **Func. diagram:** 2701, 2711

**Description:**
Sets the time to open the motor holding brake.

**Recommend:**
This time should be set longer than the actual opening time of the brake. This ensures that the drive cannot accelerate when the brake is applied.

**Dependency:**
Refer to: p1215, p1217

**Note:**
For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.
### p1217 Motor holding brake closing time / Brake t_close

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Calculation</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>P-Group</th>
<th>Scaling</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the time to apply the motor holding brake. After OFF1 or OFF3 and the holding brake is controlled (the brake closes), then the drive remains closed-loop controlled for this time stationary with a speed setpoint/velocity setpoint of zero. The pulses are suppressed when the time expires.</td>
<td>Calculated: -</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>100 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Recommend:**
This time should be set longer than the actual closing time of the brake. This ensures that the pulses are only suppressed after the brake has closed.

**Dependency:**
Refer to: p1215, p1216

**Notice:**
If the selected closing time is too short with respect to the actual closing time of the brake, then the load can sag. If the closing time is selected to be too long with respect to the actual closing time of the brake, the control works against the brake and therefore reduces its lifetime.

**Note:**
For a motor with DRIVE-CLiQ and integrated brake, for p0300 = 10000, this time is pre-assigned the value saved in the motor.

### p1218[0...1] BI: Open motor holding brake / Open brake

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Calculation</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>P-Group</th>
<th>Scaling</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the signal source for a conditional opening of the motor holding brake.</td>
<td>Calculated: -</td>
<td>2</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p1215

**Note:**
[0]: Signal, open brake, AND logic operation, input 1
[1]: Signal, open brake, AND logic operation, input 2

### p1219[0...3] BI: Immediately close motor holding brake / Close brake

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
<th>Calculation</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>P-Group</th>
<th>Scaling</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the signal source for an unconditional (immediate) closing of the motor holding brake.</td>
<td>Calculated: -</td>
<td>2</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p1215, p1275

**Note:**
[0]: Signal, immediately close brake, inversion via p1275.0
[1]: Signal, immediately close brake, inversion via p1275.1
[2]: Signal, immediately close brake
[3]: Signal, immediately close brake - refer to the factory setting
These four signals form an OR logic operation.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1220</strong></td>
<td><strong>CI: Open motor holding brake, signal source, threshold / Open brake thresh</strong></td>
<td>Sets the signal source for the command &quot;open brake&quot;. Refer to: p1215, p1221, r1229, p1277</td>
</tr>
<tr>
<td><strong>p1221</strong></td>
<td><strong>Open motor holding brake, threshold / Open brake thresh</strong></td>
<td>Sets the threshold value for the command &quot;open brake&quot;. Refer to: p1220, r1229, p1277</td>
</tr>
<tr>
<td><strong>p1222</strong></td>
<td><strong>BI: Motor holding brake feedback signal brake closed / Brake feedb closed</strong></td>
<td>Sets the signal source for the feedback signal &quot;brake closed&quot;. For motor holding brakes with feedback signal, the signal &quot;brake closed&quot; can be activated using p1275.5 = 1. Refer to: p1223, p1275</td>
</tr>
<tr>
<td><strong>p1223</strong></td>
<td><strong>BI: Motor holding brake feedback signal brake open / Brake feedb open</strong></td>
<td>Sets the signal source for the feedback signal &quot;brake open&quot;. For motor holding brakes with feedback signal, the signal &quot;brake open&quot; can be activated using p1275.5 = 1. Refer to: p1222, p1275</td>
</tr>
</tbody>
</table>

### p1220 Parameters

- **VECTOR_G** (Extended brk)
- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for the command "open brake".
- **Dependency:** Refer to: p1215, p1221, r1229, p1277

### p1221 Parameters

- **VECTOR_G** (Extended brk)
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** 0.00 [%]
- **Max:** 200.00 [%]
- **Description:** Sets the threshold value for the command "open brake".
- **Dependency:** Refer to: p1220, r1229, p1277

### p1222 Parameters

- **VECTOR_G** (Extended brk)
- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for the feedback signal "brake closed". For motor holding brakes with feedback signal, the signal "brake closed" can be activated using p1275.5 = 1.
- **Dependency:** Refer to: p1223, p1275
- **Note:** 1 signal: Brake closed. When braking with 1 feedback signal, the inverted feedback signal is connected to the BICO input for the second feedback signal (p1223). For r1229.5 = 1, OFF1/OFF3 are suppressed to prevent the drive accelerating by a load that drives the motor whereby OFF2 remains effective.

### p1223 Parameters

- **VECTOR_G** (Extended brk)
- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Description:** Sets the signal source for the feedback signal "brake open". For motor holding brakes with feedback signal, the signal "brake open" can be activated using p1275.5 = 1.
- **Dependency:** Refer to: p1222, p1275
- **Note:** 1 signal: Brake open. When braking with 1 feedback signal, the inverted feedback signal is connected to the BICO input for the second feedback signal (p1222).
### p1224[0...3]
**BI: Close motor holding brake at standstill / Brk close standst**

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Data type: Unsigned32 / Binary</td>
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<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>P-Group: Functions</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Not for motor type:</td>
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<tr>
<td>Min</td>
<td>-</td>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td>Factory setting 0</td>
</tr>
</tbody>
</table>

**Dependency:**
-  Sets the signal source for close brake at standstill.
-  Refer to: p1275

**Note:**
-  [0]: Signal, close brake at standstill, inversion via p1275.2
-  [1]: Signal, close brake at standstill, inversion via p1275.3
-  [2]: Signal, close brake at standstill
-  [3]: Signal, close brake at standstill

These four signals form an OR logic operation.

### p1225
**CI: Standstill detection, threshold value / Standstill thresh**

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
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<td>Not for motor type:</td>
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<td>-</td>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>63[0]</td>
<td>Factory setting 63[0]</td>
</tr>
</tbody>
</table>

**Dependency:**
-  Sets the signal source "threshold value" for the standstill identification.
-  Refer to: p1226, p1228, r1229

### p1226[0...n]
**Threshold for zero speed detection / n_standst n_thresh**

<table>
<thead>
<tr>
<th>Field</th>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
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<td>P-Group:</td>
<td>Functions</td>
<td>P-Group: Functions</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [rpm]</td>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
<td>210000.00 [rpm]</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>20.00 [rpm]</td>
<td>Factory setting 20.00 [rpm]</td>
</tr>
</tbody>
</table>

**Dependency:**
-  Sets the speed threshold for the standstill identification.
-  Acts on the actual value and setpoint monitoring.
-  When braking with OFF1 or OFF3, when the threshold is undershot, standstill is identified.
-  The following applies when the brake control is activated:
  - When the threshold is undershot, the brake control is started and the system waits for the brake closing time in p1217. The pulses are then suppressed.
  - if the brake control is not activated, the following applies:
    - When the threshold is undershot, the pulses are suppressed and the drive coasts down.

-  Refer to: p1215, p1216, p1217, p1227

**Notice:**
For reasons relating to the compatibility to earlier firmware versions, a parameter value of zero in indices 1 to 31 is overwritten with the parameter value in index 0 when the Control Unit boots.

**Note:**
-  Standstill is identified in the following cases:
  - the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
  - the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.
-  The actual value sensing is subject to measuring noise. For this reason, standstill cannot be detected if the speed threshold is too low.
### Description:
Sets the monitoring time for the standstill identification.

When braking with OFF1 or OFF3, standstill is identified after this time has expired, after the setpoint speed has fallen below p1226 (also refer to p1145).

After this, the brake control is started, the system waits for the closing time in p1217 and then the pulses are suppressed.

### Dependency:
Refer to: p1215, p1216, p1217, p1226

### Notice:
For p1145 > 0.0 (RFG tracking) the setpoint is not equal to zero dependent on the selected value. This can therefore cause the monitoring time in p1227 to be exceeded. In this case, for a driven motor, the pulses are not suppressed.

### Note:
Standstill is identified in the following cases:
- the speed actual value falls below the speed threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the speed threshold in p1226 and the time started after this in p1227 has expired.

For p1227 = 300.000 s, the following applies:
Monitoring is de-activated.

For p1227 = 0.000 s, the following applies:
With OFF1 or OFF3 and a ramp-down time = 0, the pulses are immediately suppressed and the motor "coasts" down.

### Description:
Sets the delay time for pulse suppression.

After OFF1 or OFF3, the pulses are canceled, if at least one of the following conditions is fulfilled:
- the speed actual value falls below the threshold in p1226 and the time started after this in p1228 has expired.
- the speed setpoint falls below the threshold in p1226 and the time started after this in p1227 has expired.

### Notice:
When the motor holding brake is activated, pulse cancellation is additionally delayed by the brake closing time (p1217).
List of parameters

05 Brake does not close
06 Brake threshold exceeded
07 Brake threshold undershot
08 Brake monitoring time expired
09 Pulse enable request missing/n_ctrl inhibited
10 Brake OR logic operation result
11 Brake AND logic operation result

### p1230[0...n]
**BI: Armature short-circuit / DC braking activation / ASC/DCBRK act**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32 / Binary

**Dynamic index:** CDS, p0170

**Func. diagram:** 7014, 7016, 7017

**P-Group:** Functions

**Units group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:**
Sets the signal source to activate the armature short-circuit or DC braking.

**Dependency:**
Refer to: p1231, p1232, p1233, p1234, p1235, p1236, p1237, r1238, r1239, p1345, p1346

**Note:**
1 signal: Armature short-circuit/DC braking activated.
0 signal: Armature short-circuit/DC braking de-activated.

### p1231[0...n]
**Armature short-circuit / DC braking configuration / ASC/DCBRK config**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Integer16

**Dynamic index:** MDS, p0130

**Func. diagram:** 7014, 7016, 7017

**P-Group:** Functions

**Units group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:**
Setting to activate the various types for armature short-circuit / DC braking.

**Value:**
0: No function
1: External armature short-circuit with contactor feedback signal
2: Ext. armature short circuit without contactor feedback signal
3: Internal voltage protection
4: Internal armature short-circuit / DC braking
5: DC braking for OFF1/OFF3
14: DC braking below starting speed

**Dependency:**
Refer to: p0300, p1230, p1232, p1233, p1234, p1235, p1236, p1237, r1238, r1239, p1345, p1346

**Danger:**
- only short-circuit-proof motors may be used, or suitable resistors must be used to short-circuit the motor
- when the internal voltage protection is active, after pulse suppression, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential!)
- it is only permissible to use motors that are short-circuit-proof (p0320 < p0323).
- The Motor Module must be able to conduct 180% short-circuit current (r0320) of the motor (r0209).
- the internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the Motor Module and/or the motor.
- if the Motor Module does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.
- if the Motor Module does support the autonomous, internal voltage protection (r0192.10 = 1), in order to ensure safe, reliable functioning when the line supply fails, the 24 V power supply for the components must be provided through a Control Supply Module.
- if the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).
**Parameters**

**List of parameters**

Re p1231 = 4 and synchronous motor:
- when armature short-circuit is active, all of the motor terminals are at half of the DC link potential.
- it is only permissible to use motors that are short-circuit proof (p0320 < p0323).
- The Motor Module must be able to conduct 180% short-circuit current (r0320) of the motor (r0209).

**Note:**

Re p1231 = 1, 2:
The external armature short circuit can only be selected for synchronous motors (p0300). In this case, control bit BO: r1239.0 must be interconnected (e.g. to a digital input) to control the external contactor.
The external armature short circuit cannot be set as a fault response. It can be triggered via binector input p1230. It is also always activated in the case of pulse suppression.

Re p1231 = 3:
Internal voltage protection (using an internal armature short circuit) can only be selected for synchronous motors (p0300) and Motor Modules in booksize or chassis format. Further, it is not permissible for Safety Integrated to be active on blocksize Motor Modules (i.e. p0501 = 0 and p0601 = 0). The internal voltage protection prevents the DC link capacitance from being charged if there is no possibility of regenerating the EMF of a motor operated in the field-weakening mode. The Motor Module must support this function (r0192.9 = 1).

a) If the Motor Module does not support the autonomous, internal armature short-circuit (r0192.10 = 0), the armature short-circuit is activated as soon as the activation criterion is fulfilled (refer below):
b) If the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1), then the Motor Module itself decides - using the DC link voltage - as to whether the short-circuit should be activated. In this case, protection is also provided even if the DRIVE-CLIQ connection between the Control Unit and Motor Module was interrupted. The short circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn. This therefore ensures that the required input voltage for the Control Supply Module is maintained.

For chassis units, the following applies:
The value for the voltage limits is calculated, depending on the voltage class, from EEPROM data of the particular power unit and a factor.
Re p1231 = 4:
The function is activated as soon as the activation criterion is fulfilled.
- the function can be superseded by OFF2
  a) For synchronous motors (p0300 = 2xx, 4xx), the internal armature short-circuit is initiated.
  b) For induction motors (p0300 = 1xx), the DC braking is initiated.
Activation criterion (one of the following criteria is fulfilled):
- binector input p1230 = 1 signal (DC braking activation).
- the drive is not in the state "S4: Operation" or in S5x (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).
Re p1231 = 5:
DC braking can only be set for induction motors.
DC braking is activated if the OFF1 or OFF3 command is present. Binector input p1230 is ineffective. If the drive speed still lies above the speed threshold p1234, then initially, the drive is ramped-down to this threshold, demagnetized (see p0347) and is then switched into DC braking for the time set in p1233. After this, the drive is switched-off. If, at OFF1/OFF3, the drive speed is below p1234, then it is immediately demagnetized and switched into DC braking. A change is made into normal operation if the OFF1 command is withdrawn prematurely.
DC braking by means of fault response continues to be possible.
Re p1231 = 14:
DC braking can only be set for induction motors.
DC braking is initiated if binector input p1230 = 1 during operation and the actual speed is below the starting speed p1234 (before this, the drive must have operated above p1234 plus the hysteresis). Then, following upstream demagnetization (see p0347), the braking current p1232 is injected for the time set in p1233. The drive then changes into normal operation. During braking the command for DC braking can be withdrawn. If the time p1233 is exceeded, then DC braking is inhibited and the drive changes into normal operation.
For OFF1 and OFF3, DC braking is only executed, if binector input p1230 = 1 signal.
DC braking by means of fault response continues to be possible.
Re p1231 = 3, 4, 5, 14:
The value can only be changed to values not equal to 3, 4, 5 or 14 if p0491 is not equal to 4 and p2101 is not equal to 6 (armature short-circuit/DC braking not set).
### List of parameters

#### p1232[0...n] DC braking, braking current / DCBRK I_brake

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1232[0...n]</td>
<td>DC braking, braking current / DCBRK I_brake</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
<td>Calculated: CALC_MOD_ALL</td>
<td>Access level: 1</td>
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<tr>
<td>Data type: FloatingPoint32</td>
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<td>Unit selection: -</td>
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<tr>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [Arms]</td>
<td>10000.00 [Arms]</td>
<td>0.00 [Arms]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the braking current for DC braking.

**Dependency:** Refer to: p1230, p1231, p1233, p1234, r1239, p1345, p1346

**Note:** A change to the braking current becomes effective the next time that DC braking is switched on. The value for p1232 is specified as an rms value in the 3-phase system. The magnitude of the braking current is the same as that of an identical output current at frequency zero (see r0067, r0068, p0640). The braking current is internally limited to r0067.

For the current controller, the settings of parameters p1345 and p1346 (I_max limiting controller) are used.

#### p1233[0...n] DC braking time / DCBRK time

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1233[0...n]</td>
<td>DC braking time / DCBRK time</td>
<td>VECTOR_G</td>
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<td>Calculated: -</td>
<td>Access level: 1</td>
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<td>Dynamic index: MDS, p0130</td>
<td>Unit selection: -</td>
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<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0 [s]</td>
<td>3600.0 [s]</td>
<td>1.0 [s]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the DC braking time (as fault response).

**Dependency:** Refer to: p1230, p1231, p1232, p1234, r1239

**Note:** The time set is also effective when parameterizing DC braking as fault response. If a speed encoder is being used, DC braking is ended as soon as the drive falls below the standstill threshold (p1226).

#### p1234[0...n] Speed at the start of DC braking / DCBRK n_start

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1234[0...n]</td>
<td>Speed at the start of DC braking / DCBRK n_start</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
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<tr>
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<td>Dynamic index: MDS, p0130</td>
<td>Unit selection: -</td>
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<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>40000.00 [rpm]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the starting speed for DC braking.

**Dependency:** Refer to: p1230, p1231, p1232, p1233, r1239

**Caution:** If the actual speed falls below this threshold, then DC braking is activated. If an encoder fault occurs during closed-loop operation with an encoder, controlled deceleration of the drive down to the start speed p1234 is no longer possible. In this case, DC braking is activated immediately and injects the braking current p1232 for the braking time p1233 after de-magnetizing. The braking current and braking duration must, therefore, be dimensioned accordingly for this situation so that the drive can be decelerated to standstill. In the case of operation with an encoder, this speed may not be set too low so as to ensure that the oscillation movement induced by the residual flux/ remanence of the motor does not cause DC braking to be de-activated again.
### p1235[0...n]
**BI: External armature short-circuit, contactor feedback signal / ASC ext feedback**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Access level</th>
<th>P-Group</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Dynamic index</th>
<th>Calculated</th>
<th>Data type</th>
<th>Calculated</th>
<th>Calculated</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1235</td>
<td>Sets the signal source for the contactor feedback signal for external armature short-circuit.</td>
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<td></td>
<td></td>
<td>1</td>
<td>Functions</td>
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<td></td>
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<tr>
<td>p1236</td>
<td>Sets the monitoring time of the contactor feedback signal for the external armature short-circuit configuration.</td>
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<td>Functions</td>
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<td></td>
<td></td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p1237</td>
<td>Sets the delay time when opening the contactor of the external armature short-circuit.</td>
<td></td>
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<td></td>
<td></td>
<td>1</td>
<td>Functions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### r1238
**CO: Armature short-circuit, external state / EASC state**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Access level</th>
<th>P-Group</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Dynamic index</th>
<th>Calculated</th>
<th>Data type</th>
<th>Calculated</th>
<th>Calculated</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1238</td>
<td>Displays the state for the external armature short-circuit.</td>
<td></td>
<td></td>
<td>0</td>
<td>6</td>
<td>2610</td>
<td>1</td>
<td>Integer16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
List of parameters

3: Active - feedback signal "Closed" OK
4: Active - feedback signal "Closed" missing
5: Prompt to remove the armature short-circuit
6: Active - feedback signal "Open" missing

Dependency:
Refer to: p1230, p1231, p1235, p1236, p1237, r1239
Refer to: A07904, F07905

Note:
Activation criterion (one of the following criteria is fulfilled):
- the signal at BI: p1230 (armature short-circuit activation) is 0.
- the drive is not in the state "S4: Operation" or in S5x (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).

Re state "switched out" (r1238 = 0):
- the external armature short-circuit can be selected with p1231 = 1.

Re state "ready" (r1238 = 1):
- as soon as the activation criterion is fulfilled, then a transition is made into the state "active" (r1238 = 2).

Regarding the state "active" (r1238 = 2), "active - feedback signal "Closed" OK" (r1238 = 3), "active - feedback signal "Closed" missing" (r1238 = 4):
- the control signal to close contactor r1239.0 is set to "1" (closed) and the pulses are suppressed.
- if a contactor feedback signal is not connected (BI: p1235 = 0 signal), then a transition is immediately made into state 3.
- if a contactor feedback signal is connected, then a transition is made into state 3 if the feedback signal at BI: p1235 goes to "1" (closed) within the monitoring time (p1236).
- otherwise, a transition is made into state 4.

Re state "prompt to remove the armature short-circuit" (r1238 = 5):
- the activation criterion is no longer fulfilled. An attempt is made to again remove the armature short circuit.
- the control signal to close the contactor r1239.0 is set to "0" (open) and the pulses remain suppressed.
- if a contactor feedback signal is not connected (BI: p1235 = 0 signal), the system waits for the delay time (p1237) to expire until a transition is made into state 1.
- if a contactor feedback signal is connected, the system waits until the feedback signal at BI:p1235 goes to "0" (open) until a transition is made into state 1. If this does not occur within the monitoring time (p1236), then a transition is made into state 6.

Re state "active - feedback signal "Open" missing" (r1238 = 6):
- this error state can be exited by de-selecting the external armature short-circuit (p1231 = 0).

r1239.0...13 CO/BO: Armature short-circuit / DC braking status word / ASC/DCBRK ZSW

<table>
<thead>
<tr>
<th>Vector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Displays the status word for armature short-circuit.</td>
</tr>
</tbody>
</table>

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>External armature short-circuit</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>External armature short-circuit, contactor feedback signal</td>
<td>Closed</td>
<td>Open</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>External armature short-circuit ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>External armature short-circuit with contactor feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Internal armature short-circuit</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Internal armature short circuit, feedback signal from power unit</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Internal armature short-circuit ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
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<tr>
<td>08</td>
<td>DC braking active</td>
<td>Yes</td>
<td>No</td>
<td>7017</td>
</tr>
<tr>
<td>10</td>
<td>DC braking ready</td>
<td>Yes</td>
<td>No</td>
<td>7017</td>
</tr>
<tr>
<td>11</td>
<td>Armature short circuit/DC braking selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DC braking selection internally inhibited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DC braking for OFF1/OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Dependency: Refer to: p1230, p1231, p1232, p1233, p1234, p1235, p1236, p1237

Note: External armature short-circuit (bits 0 ... 3):
- Re bit 00:
  Using this signal, the motor is short-circuited through an external contactor circuit. This means that this BO: p1239.0 must be interconnected e.g. to a digital output.
- Re bit 01:
  This signal indicates the state of the contactor to establish the armature short-circuit. To do this, BI: p1235 must be interconnected to a digital input.
- Re bit 02:
  The external armature short-circuit configuration is ready and is activated as soon as the activation criterion is fulfilled.
- Re bit 03:
  1: A feedback signal from an external contactor was parameterized in BI: p1235.

Internal voltage protection / internal armature short-circuit (bits 4 ... 6):
- Re bit 04:
  a) Internal voltage protection (p1231 = 3) was selected and the Motor Module does not support the autonomous internal voltage protection (r0192.10 = 0).
  The Control Unit issues the command to the Motor Module to short-circuit the motor through the power semiconductors.
  a) Internal voltage protection (p1231 = 3) was selected and the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1).
  The Motor Module decides autonomously whether the armature short-circuit is activated. In this case, the following applies: r1239.4 = r1239.5.
  c) Internal armature short-circuit (p1231 = 4) was selected.
  The Control Unit issues the command to the Motor Module to short-circuit the motor through the power semiconductors.
- Re bit 05:
  The Motor Module signals that the motor is short-circuited in the Motor Module through the power semiconductors.
- Re bit 06:
  a) Internal voltage protection (p1231 = 3) was selected and the Motor Module does not support the autonomous internal voltage protection (r0192.10 = 0).
  The internal voltage protection is ready and is activated as soon as the activation criterion is fulfilled.
  a) Internal voltage protection (p1231 = 3) was selected and the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1).
  The internal voltage protection is ready and the Motor Module decides autonomously - using the DC link voltage - whether the short-circuit is activated. In this case, protection is also provided even if the DRIVE-CLiQ connection between the Control Unit and Motor Module was interrupted. The short-circuit is activated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the short-circuit is withdrawn.
  c) Internal armature short-circuit (p1231 = 4) was selected.
  The internal armature short-circuit is ready and is activated as soon as the activation criterion is fulfilled.

Activation criterion (one of the following criteria is fulfilled):
- the signal at BI: p1230 (armature short-circuit activation) is 1.
- the drive is not in the state "S4: Operation" or in S5x (refer to function diagram 2610).
- the internal pulse enable is missing (r0046.19 = 0).

Re bit 12, 13:
- Only effective for p1231 = 14.

<table>
<thead>
<tr>
<th>p1240[0...n]</th>
<th>Vdc controller or Vdc monitoring configuration / Vdc_ctrl config</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0</td>
<td>Max</td>
</tr>
<tr>
<td>6</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description: Sets the controller configuration of the DC link voltage (Vdc controller) in the closed-loop control mode.
### List of parameters

#### Parameters

**Value:**
- 0: Inhib Vdc ctrl
- 1: Vdc_max controller enable
- 2: Vdc_min controller (kinetic buffering) enable
- 3: Vdc_min controller and Vdc_max controller enable
- 4: Activates Vdc_max monitoring
- 5: Activates Vdc_min monitoring
- 6: Activates Vdc_min monitoring and Vdc_max monitoring

**Dependency:**
Refer to: p1245
Refer to: A07400, A07401, A07402, F07403, F07404, F07405, F07406

**Warning:**
When the Udc max controller is active, the motor can accelerate, e.g. for driving loads or for high DC link voltages caused by other drives that are connected to the common DC link busbar.

**Caution:**
If several drives are operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with high moments of inertia. If the Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated.

Drives with Udc control must be able to brake and accelerate independently of one another.

**Notice:**
An excessively high value in p1245 can possibly negatively influence the normal operation of the drive.

**Note:**
P1240 = 1, 3:
When the DC link voltage limit specified for the Motor Module is reached the following applies:
- the Vdc_max controller limits the regenerative energy in order that the DC link voltage is kept below the maximum DC link voltage when braking.
- the ramp-down times are automatically increased.
P1240 = 2, 3:
When the switch-in threshold of the Vdc_min controller is reached (p1245), the following applies:
- the Vdc_min controller limits the energy taken from the DC link in order to keep the DC link voltage above the minimum DC link voltage when accelerating.
- the motor is braked in order to use its kinetic energy to buffer the DC link.
P1240 = 4, 5, 6:
When the threshold in r1242 or r1246 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.

If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled. See also p1531.

### r1242 Vdc_max controller switch-in level / Vdc_max on_level

**VECTOR_G (n/M)**

**Can be changed:** -
**Calculated:** -
**Access level:** 3

**Data type:** FloatingPoint32
**Dynamic index:** -
**Func. diagram:** 6220

**P-Group:** Functions
**Units group:** -
**Unit selection:** -

**Not for motor type:** REL
**Scaling:** p2001
**Expert list:** 1

**Min**
- [V]

**Max**
- [V]

**Factory setting**
- [V]

**Description:**
Displays the switch-in level for the Vdc_max controller.

If p1254 = 0 (automatic sensing of the switch-in level = off), then the following applies:
AC/AC device: r1242 = 1.15 * sqrt(2) * p0210
DC/AC device: r1242 = 1.15 * p0210

If p1254 = 1 (automatic sensing of the switch-in level = on), then the following applies:
r1242 = Vdc_max - 50.0 V (Vdc_max: Overvoltage threshold of the power unit)
r1242 = Vdc_max - 25.0 V (for 230 V power units)

**Note:**
The Vdc_max controller is not switched back off until the DC-link voltage falls below the threshold 0.95 * p1242 and the controller output is zero.
### List of parameters

**p1243[0...n]**  
**Vdc_max controller dynamic factor / Vdc_max dyn_factor**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>CALC_MOD_CON</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**P-Group:** Functions  
**Units group:** -  
**Not for motor type:** REL  
**Scaling:** -  
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 [%]</td>
<td>10000 [%]</td>
<td>100 [%]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the dynamic factor for the DC link voltage controller (Vdc_max controller).  
100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.  
If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1243.  
If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

**Note:**  
The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

**p1245[0...n]**  
**Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**P-Group:** Functions  
**Units group:** -  
**Not for motor type:** REL  
**Scaling:** -  
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>65 [%]</td>
<td>150 [%]</td>
<td>76 [%]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the switch-in level for the Vdc-min controller (kinetic buffering).  
The value is obtained as follows:  
AC/AC device: \( r1246[V] = p1245[\%] \times \sqrt{2} \times p0210 \)  
DC/AC device: \( r1246[V] = p1245[\%] \times p0210 \)  
**Dependency:**  
Refer to: p0210  
**Warning:**  
An excessively high value may adversely affect normal drive operation. The values up to 150 % are intended for operating modes p1240 = 5, 6.

**Note:**  
For SINAMICS GM/SM, the following applies:  
Minimum value = 0.75, Maximum value = 0.90

**r1246**  
**Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**P-Group:** Functions  
**Units group:** -  
**Not for motor type:** REL  
**Scaling:** p2001  
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min [V]</th>
<th>Max [V]</th>
<th>Factory setting [V]</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [V]</td>
<td>- [V]</td>
<td>- [V]</td>
</tr>
</tbody>
</table>

**Description:**  
Displays the switch-in level for the Vdc_min controller (kinetic buffering).  
**Note:**  
The Vdc_min controller is not switched back off until the DC-link voltage rises above the threshold 1.05 * p1246 and the controller output is zero.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Parameter Name</th>
<th>Description</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1247[0...n]</td>
<td>Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor</td>
<td>Sets the dynamic factor for the Vdc_min controller (kinetic buffering). 100% means that p1250, p1251, and p1252 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization. If subsequent optimization is required, this can be carried out using the dynamic factor. In this case p1250, p1251, p1252 are weighted with the dynamic factor p1247. If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p1249[0...n]</td>
<td>Vdc_max controller speed threshold / Vdc_max n_thresh</td>
<td>Sets the lower speed threshold for the Vdc_max controller. When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator. For fast braking where the ramp-function generator tracking was active, it is possible to prevent the drive rotating in the opposite direction by increasing the speed threshold and setting a final rounding-off time in the ramp-function generator (p1131). This is supported using a dynamic setting of the speed controller.</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td>3_1</td>
<td>p0505</td>
<td>3</td>
</tr>
<tr>
<td>p1250[0...n]</td>
<td>Vdc controller proportional gain / Vdc_ctrl Kp</td>
<td>Sets the proportional gain for the DC-link voltage controller (Vdc_min controller, Vdc_max controller). The effective proportional gain is obtained taking into account p1243 (Vdc_max controller dynamic factor). The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the individual Motor Module. The capacitances of the other power units, which are connected to the DC link, can be taken into account using the dynamic factor (p1247 or p1243).</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p1251[0...n]</td>
<td>Vdc controller integral time / Vdc_ctrl Tn</td>
<td>Sets the integral time for the DC-link voltage controller (Vdc_min controller, Vdc_max controller). The effective integral time is obtained taking into account p1243 (Vdc_max controller dynamic factor).</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1252[0...n]</td>
<td>Vdc controller rate time / Vdc_ctrl t_rate</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
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<td></td>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: REL</td>
<td>Unit selection: -</td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 [ms]</td>
<td>1000 [ms]</td>
<td>0 [ms]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1254</td>
<td>Vdc_max controller automatic ON level detection / Vdc_max SenseOnLev</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: REL</td>
<td>Unit selection: -</td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1255[0...n]</td>
<td>Vdc_min controller time threshold / Vdc_min t_thresh</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: REL</td>
<td>Unit selection: -</td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.000 [s]</td>
<td>10000.000 [s]</td>
<td>0.000 [s]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1256[0...n]</td>
<td>Vdc_min controller response (kinetic buffering) / Vdc_min response</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Data type: Integer16</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: REL</td>
<td>Unit selection: -</td>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
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<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
An integral time is normally not required for single axis drives. For multi-axis drives on the other hand, it may be possible to compensate for interference from other axes using the integral time (integral component).
p1251 = 0: The integral component is de-activated.

**Description:**
Sets the rate time constant for the DC-link voltage controller (Vdc_min controller, Vdc_max controller).

**Dependency:**
The effective rate time is obtained taking into account p1243 (Vdc_max controller dynamic factor).

**Value:**
0: Automatic detection inhibited
1: Automatic detection enabled

**Notice:**
If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1240 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.
### p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thresh

**Description:**
Sets the speed threshold for the Vdc-min controller (kinetic buffering).
If this value is exceeded a fault is output; the required response can be parameterized.

**Value:**
- Can be changed: U, T
- Calculated: CALC_MOD_ALL
- Access level: 3
- Data type: FloatingPoint32
- Dynamic index: DDS, p0180
- Func. diagram: -
- P-Group: Functions
- Units group: 3_1
- Unit selection: p0505
- Not for motor type: REL
- Scaling: -
- Expert list: 1
- Min: 0.00 [rpm]
- Max: 210000.00 [rpm]
- Factory setting: 50.00 [rpm]

### r1258 CO: Vdc controller output / Vdc_ctrl output

**Description:**
Displays the actual output of the Vdc controller (DC link voltage controller)

**Value:**
- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: FloatingPoint32
- Dynamic index: -
- Func. diagram: 6220
- P-Group: Functions
- Units group: 6_2
- Unit selection: p0505
- Not for motor type: REL
- Scaling: p2002
- Expert list: 1
- Min: - [Arms]
- Max: - [Arms]
- Factory setting: - [Arms]

### p1260 Bypass configuration / Bypass config

**Description:**
Sets the configuration for the bypass function.

**Value:**
- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: Integer16
- Dynamic index: -
- Func. diagram: -
- P-Group: -
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: 0
- Max: 3
- Factory setting: 0

**Note:**
If the bypass function is selected ((p1260 > 0), then when the power unit restarts after POWER OFF, the state of the bypass switch is evaluated. This means that after the ramp-up, it is possible to directly change into the standby mode. This is only possible for p1267 = 1 (bypass using the control signal) and if the control command after the system has been booted is still available (p1266). This function has a higher priority than the automatic restart function (p1210).
The "bypass" function can only be switched off again (p1260 = 0) if the bypass is not active or the bypass function has a fault.
The corresponding function should be activated in p3800 for bypass with synchronization.

### r1261.0...9 CO/BO: Bypass control/status word / Bypass STW / ZSW

**Description:**
Control and feedback signals of the bypass switch.

**Bit field:**
- Bit | Signal name | 1 signal | 0 signal | FP
- 00 | Command switch motor - power unit | Close | Open | -
- 01 | Command switch motor - line supply | Close | Open | -
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1262[0...n]</td>
<td>Bypass dead time / Bypass ( t_{\text{dead}} )</td>
<td>Can be changed: U, T</td>
<td>Calculated: CALC_MOD_REG</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDC, p0180</td>
<td></td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>20.000 [s]</td>
<td>1.000 [s]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the dead time for non-synchronized bypass.

Note: This parameter is used to define the changeover time of the contactors. It should not be shorter than the de-magnetizing time of the motor (p0347). The total changeover time for the bypass is based on the total of p1262 plus the OFF time for the relevant switch (p1274[x]).

| p1263 | Debypass delay time / Debypass \( t_{\text{del}} \) | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dynamic index: - | | Func. diagram: - |
| P-Group: - | Units group: - | | Unit selection: - |
| Not for motor type: - | Scaling: - | | Expert list: 1 |
| Min | Max | Factory setting |
| 0.000 [s] | 300.000 [s] | 1.000 [s] |

Description: Sets the delay time to switch back to converter operation for a non-synchronized bypass.

| p1264 | Bypass delay time / Bypass \( t_{\text{del}} \) | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dynamic index: - | | Func. diagram: - |
| P-Group: - | Units group: - | | Unit selection: - |
| Not for motor type: - | Scaling: - | | Expert list: 1 |
| Min | Max | Factory setting |
| 0.000 [s] | 300.000 [s] | 1.000 [s] |

Description: Sets the delay time for switching to line operation for a non-synchronized bypass.

| p1265 | Bypass speed threshold / Bypass \( n_{\text{thresh}} \) | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dynamic index: - | | Func. diagram: - |
| P-Group: - | Units group: 3_1 | | Unit selection: p0505 |
| Not for motor type: REL | Scaling: p2000 | | Expert list: 1 |
| Min | Max | Factory setting |
| 0.00 [rpm] | 210000.00 [rpm] | 1480.00 [rpm] |

Description: Sets the speed threshold to activate the bypass.

Note: When selecting p1260 = 3 and p1267.1 = 1, the bypass is automatically activated when this speed is reached.
### p1266 BI: Bypass, control command / Bypass command

**VECTOR_G**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source for the control command to the bypass.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
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</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

### p1267 Bypass changeover source configuration / Chngov_src config

**VECTOR_G**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the cause that should initiate the bypass.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned8</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
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</tr>
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<td><strong>Access level:</strong></td>
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<table>
<thead>
<tr>
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<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bypass via signal (BI: p1266)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Bypass via reaching the speed threshold</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

- The parameter only has an effect for a non-synchronized bypass.
- p1267.0 = 1: The bypass is initiated by setting a binary signal. When the command is reset, after the debypass delay time (p1263) has expired, operation at the power unit is re-selected.
- p1267.1 = 1: When the speed threshold entered in p1265 is reached, the bypass is switched in. The system only switches back when the speed setpoint again falls below the threshold value.

### p1268 BI: Bypass, feedback synchronization completed / FS sync compl

**VECTOR_G**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source for the feedback signal &quot;synchronization completed&quot; for the bypass function.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
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<tr>
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<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r3819

**Min Max Factory setting**

- - 3819.2

### p1269[0...1] BI: Bypass switch feedback signal / Bypass FS

**VECTOR_G**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the signal source for the feedback signal of the bypass switch.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
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</tr>
<tr>
<td><strong>Min:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

**Index:**

- [0] = Switch motor/drive
- [1] = Switch motor/line supply

**Note:**

In the case of switches without a feedback signal, interconnect the corresponding control bit as the signal source:

- BI: p1269[0] = r1261.0
- BI: p1269[1] = r1261.1
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependencies</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1272</td>
<td>Simulation mode / Simulation mode</td>
<td>VECTOR_G</td>
<td>In the simulation mode, the closed-loop control or U/f control can be operated without motor. The simulation mode is used to test the power unit. Even though the DC link voltage is missing, the pulses are enabled when powering up. The DC link pre-charging is bypassed and the undervoltage detection is disabled. Closed-loop speed control with an encoder is possible if the torque setpoint (r0079) is used in order to operate a second drive in the closed-loop torque controlled mode.</td>
<td>Simulation mode is only possible for DC link voltages below 40 V. In order that the closed-loop control can be calculated, the displayed DC link voltage (r0026, r0070) is set to the rated DC link voltage (refer to p0210). Closed-loop current control and motor model are switched out (disabled) - the same is true for the speed controller for encoderless closed-loop speed control. When fault messages occur, the parameter is not automatically reset. This function is not implemented for SINAMICS GM.</td>
<td></td>
</tr>
<tr>
<td>p1274[0...1]</td>
<td>Bypass switch monitoring time / Switch t_monit</td>
<td>VECTOR_G</td>
<td>The following functions are de-activated in the simulation mode: - motor data identification routine - motor data identification routine, rotating without encoder - pole position identification For U/f control and sensorless vector control, flying restart is not carried out (refer to p1200). Refer to: r0192, p1900, p1910, p1960, p1990 Refer to: A07825, F07826</td>
<td>In simulation mode, binector output r0863.1 = 1 is set. This is why you need to check whether other devices are powered up via this signal before activating simulation mode. You might need to disconnect the corresponding BICO interconnection temporarily.</td>
<td>Sets the monitoring time for the bypass switch. [0] = Switch motor/drive [1] = Switch motor/line supply The monitoring is de-activated with p1274 = 0 ms. The changeover time for the bypass (p1262) is extended by the value in this parameter.</td>
</tr>
<tr>
<td>p1275</td>
<td>Motor holding brake control word / Brake STW</td>
<td>VECTOR_G</td>
<td></td>
<td></td>
<td>Sets the control word for the motor holding brake.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Index</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1272 Simulation mode</td>
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<td>Can be changed: T</td>
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<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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<td></td>
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<tr>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1275 Motor holding brake control word</td>
<td></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td>P-Group: Functions</td>
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<td>Unit selection: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0000 0000 bin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1274[0...1] Bypass switch monitoring time</td>
<td></td>
<td>Can be changed: U, T</td>
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<td>Access level: 2</td>
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<td>Func. diagram: -</td>
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<td>P-Group: -</td>
<td>Units group: -</td>
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<td></td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
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<tr>
<td>0 [ms]</td>
<td>5000 [ms]</td>
<td>1000 [ms]</td>
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### List of parameters

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<thead>
<tr>
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<th>0 signal</th>
<th>FP</th>
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<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Inverting Bl: 1219[0]</td>
<td>Yes</td>
<td>No</td>
<td>2707</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Inverting Bl: 1219[1]</td>
<td>Yes</td>
<td>No</td>
<td>2707</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>Inverting Bl: 1224[0]</td>
<td>Yes</td>
<td>No</td>
<td>2704</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>Inverting Bl: 1224[1]</td>
<td>Yes</td>
<td>No</td>
<td>2704</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Brake with feedback</td>
<td>Yes</td>
<td>No</td>
<td>2711</td>
</tr>
</tbody>
</table>

#### p1276 Motor holding brake, standstill detection, bypass / Brk standst bypass

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** 0.000 [s]
- **Max:** 300.000 [s]
- **Factory setting:** 300.000 [s]

**Description:** Sets the delay time for closing the brake at standstill.

After this time has expired, if the "close brake at standstill" or OFF1/OFF3 is present, the brake is closed and the pulses are suppressed.

For p1276 = 300.000 s, the timer is de-activated - this means that the timer output is always zero.

#### p1277 Motor holding brake, braking threshold delay exceeded / Del thresh exceed.

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** 0.000 [s]
- **Max:** 300.000 [s]
- **Factory setting:** 0.000 [s]

**Dependency:** Refer to: p1220, p1221, r1229

**Description:** Sets the delay time for the signal "braking threshold exceeded" (BO: r1229.6).

#### p1278 Brake control, diagnostics evaluation / Brake diagnostics

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:** Sets the brake control type (with or without diagnostics evaluation).

Example for brake control with diagnostics evaluation.
- brake control in the Motor Modules in booksize format
- Safe Brake Relay for AC Drive

Example for brake control without diagnostics evaluation.
- Brake Relay for AC Drive

**Value:**
- 0: Brake control with diagnostics evaluation
- 1: Brake control without diagnostics evaluation

**Note:**
- If the configuration of the motor holding brake (p1215) is set to "no holding brake present" when booting, then an automatic identification of the motor holding brake will be carried out. If a brake control is detected without diagnostics evaluation (e.g. Brake Relay for AC Drive), then the parameter is set to "brake control without diagnostics evaluation".
- It is not permissible to parameterize "brake control without diagnostics evaluation" and also enable "safe brake control" (p1278 = 1, p9602 = 1, p9802 = 1).
**p1279[0...3]**  
**BI: Motor holding brake, OR/AND logic operation / Brake OR AND**  
**VECTOR_G**  
(Extended brk)  
**Can be changed:** T  
**Data type:** Unsigned32 / Binary  
**P-Group:** Functions  
**Not for motor type:** -  
**Min**  
**Access level:** 2  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Factory setting:** 0  
| Description: | Sets the signal source for the OR/AND logic operation.  
| Dependency: | Refer to: r1229  
| Note: | [0]: OR logic operation, input 1 --> the result is displayed in r1229.10.  
| | [1]: OR logic operation, input 2 --> the result is displayed in r1229.10.  
| | [2]: AND logic operation, input 1 --> the result is displayed in r1229.11.  
| | [3]: AND logic operation, input 2 --> the result is displayed in r1229.11.  

**p1280[0...n]**  
**Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f**  
**VECTOR_G**  
**Can be changed:** U, T  
**Data type:** Integer16  
**P-Group:** Functions  
**Not for motor type:** -  
**Min**  
**Access level:** 3  
**Dynamic index:** DDS, p0180  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1  
**Factory setting:** 0  
| Description: | Sets the configuration of the controller for the DC link voltage (Vdc controller) in the U/f operating mode.  
| Value: | 0: Inhib Vdc ctrl  
| | 1: Vdc_max controller enable  
| | 2: Vdc_min controller (kinetic buffering) enable  
| | 3: Vdc_min controller and Vdc_max controller enable  
| | 4: Activates Vdc_max monitoring  
| | 5: Activates Vdc_min monitoring  
| | 6: Activates Vdc_min monitoring and Vdc_max monitoring  
| Warning: | When the Udc max controller is active, the motor can accelerate, e.g. for driving loads or for high DC link voltages caused by other drives that are connected to the common DC link busbar.  
| Caution: | If several drives are operated from the same DC link busbar, then it is recommended that the Udc control is only activated for the drives with relatively high moments of inertia. If the Udc controls for various drives are simultaneously active, then they can mutually influence one another. In this case, the controller dynamic performance should be reduced or the Udc control of individual drives should be deactivated.  
| Drives with Udc control must be able to brake and accelerate independently of one another.  
| Note: | p1240 = 4, 5, 6:  
| | When the threshold in r1282 or r1286 is reached, the DC link voltage monitoring initiates a fault (F07403 or F07404) with a response and therefore reduces additional negative effects on the DC link voltage.  
| If a braking resistor is connected to the DC link, then the Vdc_max control should be disabled.  

**r1282**  
**Vdc_max controller switch-in level (U/f) / Vdc_max on level**  
**VECTOR_G**  
**Can be changed:** -  
**Data type:** FloatingPoint32  
**P-Group:** Functions  
**Not for motor type:** -  
**Min**  
**Access level:** 3  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** p2001  
**Expert list:** 1  
| | Factory setting  
| | - [V]  
| | - [V]  
| Description: | Displays the switch-in level for the Vdc_max controller.  
| If p1294 = 0 (automatic sensing of the switch-in level = off), then the following applies:  
| AC/AC device: r1282 = 1.15 * sqrt(2) * p0210  
| DC/AC device: r1282 = 1.15 * p0210  

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If \( p1294 = 1 \) (automatic sensing of the switch-in level = on), then the following applies:

\[ r1282 = V_{dc\_max} - 50.0 \text{ V} \]  
\[ r1282 = V_{dc\_max} - 25.0 \text{ V} \]  
(for 230 V power units)

**Note:**
The Vdc\(_{\text{max}}\) controller is not switched back off until the DC-link voltage falls below the threshold \( 0.95 \times p1282 \) and the controller output is zero.

### p1283[0...n] Vdc\(_{\text{max}}\) controller dynamic factor (U/f) / Vdc\(_{\text{max}}\) dyn_factor

**Description:**
Sets the dynamic factor for the DC link voltage controller (Vdc\(_{\text{max}}\) controller).

100\% means that \( p1290, p1291, \) and \( p1292 \) (gain, integral time, and rate time) are used in accordance with their basic settings and on the basis of a theoretical controller optimization.

If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, \( p1290, p1291, \) and \( p1292 \) are weighted with the dynamic factor \( p1283 \).

If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

**Note:**
The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

### p1285[0...n] Vdc\(_{\text{min}}\) controller switch-in level (kinetic buffering) (U/f) / Vdc\(_{\text{min}}\) on_level

**Description:**
Sets the switch-in level for the Vdc\(_{\text{min}}\) controller (kinetic buffering).

The value is obtained as follows:

\[ V_{dc\_min} = p1285\% \times \sqrt{2} \times p0210 \]  
\[ V_{dc\_min} = p1285\% \times p0210 \]  

**Warning:**
An excessively high value may adversely affect normal drive operation. The values up to 150 \% are intended for operating modes \( p1240 = 5, 6 \).

### r1286 Vdc\(_{\text{min}}\) controller switch-in level (kinetic buffering) (U/f) / Vdc\(_{\text{min}}\) on_level

**Description:**
Displays the switch-in level for the Vdc\(_{\text{min}}\) controller (kinetic buffering).

**Note:**
The Vdc\(_{\text{min}}\) controller is not switched back off until the DC-link voltage rises above the threshold \( 1.05 \times p1286 \) and the controller output is zero.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Unit</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1287[0...n]</strong></td>
<td>Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
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<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6320</td>
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<td>Units group: -</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min 1 [%]</td>
<td>Max 10000 [%]</td>
<td>Factory setting 100 [%]</td>
</tr>
<tr>
<td><strong>p1288[0...n]</strong></td>
<td>Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: -</td>
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<td>Units group: -</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min 0.000</td>
<td>Max 100.000</td>
<td>Factory setting 0.500</td>
</tr>
<tr>
<td><strong>p1289[0...n]</strong></td>
<td>Vdc_max controller speed threshold (U/f) / Vdc_max n_thresh</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
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<tr>
<td></td>
<td>Min 0.00 [rpm]</td>
<td>Max 210000.00 [rpm]</td>
<td>Factory setting 10.00 [rpm]</td>
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<tr>
<td><strong>p1290[0...n]</strong></td>
<td>Vdc controller proportional gain (U/f) / Vdc_ctrl Kp</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 1.00</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the dynamic factor for the Vdc_min controller (kinetic buffering).
- 100% means that p1290, p1291, and p1292 (gain, integral time, and rate time) are used corresponding to their basic settings and based on a theoretical controller optimization.
- If subsequent optimization is required, this can be carried out using the dynamic factor. In this case, p1290, p1291, and p1292 are weighted with the dynamic factor p1287.
- If several modules are connected to the DC link, then the dynamic factor must be increased corresponding to the ratio of the additional capacitances to the capacitance of the module involved.

**Note:**
- The pre-setting of the dynamic factor is based on the power units connected to DRIVE-CLiQ. It is assumed that the power units connected via DRIVE-CLiQ are also electrically connected to the DC link. If this is not the case, then the dynamic factor must be optimized manually.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Unit</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1288[0...n]</strong></td>
<td>Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
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<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: -</td>
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<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min 0.000</td>
<td>Max 100.000</td>
<td>Factory setting 0.500</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the feedback factor for the ramp-function generator. Its ramp times are decelerated relative to the output signal of the Vdc_max controller.

**Note:**
- For values p1288 = 0.0 to 0.5, the controller dynamics are automatically adapted internally.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Unit</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1289[0...n]</strong></td>
<td>Vdc_max controller speed threshold (U/f) / Vdc_max n_thresh</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: 3_1</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min 0.00 [rpm]</td>
<td>Max 210000.00 [rpm]</td>
<td>Factory setting 10.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the lower speed threshold for the Vdc_max controller. When this speed threshold is undershot, the Vdc_max control is switched out and the speed is controlled using the ramp-function generator.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Unit</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1290[0...n]</strong></td>
<td>Vdc controller proportional gain (U/f) / Vdc_ctrl Kp</td>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6320</td>
</tr>
<tr>
<td></td>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min 0.00</td>
<td>Max 100.00</td>
<td>Factory setting 1.00</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the proportional gain for the Vdc controller (DC link voltage controller).

**Note:**
- The gain factor is proportional to the capacitance of the DC link. The parameter is pre-set to a value that is optimally adapted to the capacitance of the individual Motor Module. The capacitances of the other power units which are connected to the DC link can be taken into account using the dynamic factor (p1287 or p1283).
### p1291[0...n] Vdc controller integral time (U/f) / Vdc_ctrl Tn

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>6320</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>40 [ms]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the integral time for the Vdc controller (DC link voltage controller).

### p1292[0...n] Vdc controller rate time (U/f) / Vdc_ctrl t_rate

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_CON</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>6320</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>1000 [ms]</td>
<td>10 [ms]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the rate time constant for the Vdc controller (DC link voltage controller).

### p1293[0...n] Vdc min controller output limit (U/f) / Vdc_min outp_lim

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>CALC_MOD_CON</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>6320</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [Hz]</td>
<td>600.00 [Hz]</td>
<td>10.00 [Hz]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the output limit for the Vdc min controller (DC link undervoltage controller).

### p1294 Vdc_max controller automatic detection ON signal level (U/f) / Vdc_max SenseOnLev

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Activates/de-activates the automatic sensing of the switch-in level for the Vdc_max controller. When the sensing function is de-activated, the activation threshold r1282 for the Vdc_max controller is determined from the parameterized connection voltage p0210.

**Value:**

0: Automatic detection inhibited
1: Automatic detection enabled

### p1295[0...n] Vdc_min controller time threshold (U/f) / Vdc_min t_thresh

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Functions</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>10000.000 [s]</td>
<td>0.000 [s]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the time threshold for the Vdc_min controller (kinetic buffering). If this value is exceeded a fault is output; the required response can be parameterized.

**Prerequisite:** p1296 = 1.
### Parameters

**List of parameters**

#### Notice:

If a time threshold has been parameterized, the Vdc_max controller should also be activated (p1280 = 3) so that the drive does not shut down with overvoltage when Vdc_min control is exited (due to the time violation) and in the event of fault response OFF3. It is also possible to increase the OFF3 ramp-down time p1135.

---

### p1296[0...n]

**Vdc_min controller response (kinetic buffering) (U/f / Vdc_min response)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the response for the Vdc_min controller (kinetic buffering).

**Value:**

0: Buffer Vdc until undervoltage, n<p1297 -> F07405
1: Buff. Vdc until undervolt., n<p1297 -> F07405, t>p1295 -> F07406

**Note:**

Re p1296 = 1:
The quick stop ramp entered in p1135 must not be equal to zero, to prevent overcurrent shutdown if F07406 is triggered.

---

### p1297[0...n]

**Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0.00 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>210000.00 [rpm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the speed threshold for the Vdc-min controller (kinetic buffering).

**Value:**

If this value is exceeded a fault is output; the required response can be parameterized.

---

### r1298

**CO: Vdc controller output (U/f) / Vdc_ctrl output**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Functions</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>- [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>- [rpm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Displays the actual output of the Vdc controller (DC link voltage controller)

---

### p1300[0...n]

**Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(1), T</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>U/f open-loop control</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the U/f control mode of the drive.

**Value:**

0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
3: U/f control with parameterizable characteristic
4: U/f control with linear characteristic and ECO
5: U/f control for drives requiring a precise freq. (e.g. textiles)
6: U/f control for drives requiring a precise frequency and FCC
7: U/f control for a parabolic characteristic and ECO
Parameters

List of parameters

15: Operation with braking resistor
19: U/f control with independent voltage setpoint

Recommend.: The use of the vector control operating modes is recommended for synchronous motors.

Dependency: If you are working with reduced supply voltages (p0212.0 = 1), only U/f control with independent voltage setpoint (p1300 = 19) can be set as the operating mode.

The use of the vector control operating modes is recommended for synchronous motors.

Notice: This operating mode is only possible for chassis power units (DC/AC Motor Module).

Notice: The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note: For the open-loop control modes p1300 = 5 and 6, the slip compensation p1335 and the resonance damping p1338 are internally switched out (disabled) in order to be able to precisely set the output frequency.

Note: During operation (pulses enabled) the open-loop control mode cannot be changed by changing over drive data sets.

p1300[0...n] Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode

VECTOR_G (n/M) Can be changed: C2(1), T Calculated: - Access level: 2

Data type: Integer16 Dynamic index: DDS, p0180 Func. diagram: 1690, 1700, 6300, 8012

P-Group: U/f open-loop control Units group: - Unit selection: -

Not for motor type: - Scaling: - Expert list: 1

Min Max Factory setting
0 23 20

Description: Sets the open and closed-loop control mode of a drive.

Value:
0: U/f control with linear characteristic
1: U/f control with linear characteristic and FCC
2: U/f control with parabolic characteristic
3: U/f control with parameterizable characteristic
4: U/f control with linear characteristic and ECO
5: U/f control for drives requiring a precise freq. (e.g. textiles)
6: U/f control for drives requiring a precise frequency and FCC
7: U/f control for a parabolic characteristic and ECO
15: Operation with braking resistor
18: U/f control with fixed current
19: U/f control with independent voltage setpoint
20: Speed control (encoderless)
21: Speed control (with encoder)
22: Torque control (encoderless)
23: Torque control (with encoder)

Recommend.: The use of the vector control operating modes is recommended for synchronous motors.

Dependency: Closed-loop speed or torque control (with encoder) cannot be selected if the encoder type is not entered (p0400). Closed-loop speed or torque control can be selected if the closed-loop speed/torque control was selected as operating mode (p0108.2).

A reluctance motor can only be operated in a U/f control mode (p1300 < 20). Sensorless control on separately excited synchronous motors is only possible with a VSM module (see p0150, p0151).

For chassis power units with reduced line voltage (see r0212 bit 0), the drive can only be operated in a control mode (p1300 = 20...23) and with the DC link voltage control activated.

Refer to: p0108, r0108, p0212, p0300, p0311, p0400, p1501

Notice: Active slip compensation is required in the U/f control types with Eco mode (p1300 = 4, 7). The scaling of the slip compensation (p1335) should be set so that the slip is completely compensated (generally 100%).
The Eco mode is only effective in steady-state operation and when the ramp-function generator is not bypassed. In the case of analog setpoints, if required the tolerance for ramp-up and ramp-down should be actively increased for the ramp-function generator using p1148 in order to reliably signal a steady-state condition.

Note:
The closed-loop torque control can only be changed over in operation (p1300 = 20, 21) by selecting the closed-loop speed control (p1501). At the changeover, the setting of p1300 does not change. In this case, the actual state is displayed in r1407, bit 2 and bit 3.

For the open-loop control modes p1300 = 5 and 6 (textile sector), slip compensation p1335, resonance damping p1338, and the Imax frequency controller are switched off internally so that the output frequency can be set precisely. The Imax voltage controller remains active.

For the open-loop control modes p1300 = 4 and 7 (Eco mode), the efficiency can be optimized by varying the voltage (when the operating point is constant).

Separately-excited synchronous motors can only be operated in modes p1300 = 20, 21 and 23 - or for diagnostic purposes in modes p1300 = 0, 3 and 18. For I/f control (p1300 = 18), the current amplitude can be set using p1609. Both for U/f as well as for I/f control only a small load may be applied to the separately-excited synchronous motor because the excitation current is not calculated as a function of the load.

During operation (pulses enabled) the open-loop/closed-loop control mode cannot be changed by changing over drive data sets.

p1300 is pre-assigned depending on r0108.2 and p0187.

### p1302[0...n]

**U/f control configuration / U/f configuration**

<table>
<thead>
<tr>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 bin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the U/f control.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>U_output starting angle zero</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Take into account the setpoint voltage sign</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
Re bit 00:
If the bit is set the device will always start up with setpoint angle zero on pulse enable. This also affects the setpoint angle for DC braking (p1231).

Re bit 01:
If the bit is set, in the case of U/f control with independent voltage setpoint (p1300 = 19) and negative setpoint voltages at the input of p1330, the setpoint angle is rotated through 180 degrees, thereby achieving a negative output voltage. The voltage boost is in this case not active (p1310, p1311).

### p1310[0...n]

**Voltage boost permanent / U_boost perm**

<table>
<thead>
<tr>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 1690, 6300</td>
</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>250.0 [%]</td>
<td>50.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Defines the voltage boost as a [%] referred to the rated motor current (p0305).

The magnitude of the permanent voltage boost is reduced with increasing frequency so that at the rated motor frequency, the rated motor voltage is present.

The magnitude of the boost in Volt at a frequency of zero is defined as follows:
Voltage boost [V] = 1.732 x p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1310 (permanent voltage boost [%]) / 100 %

At low output frequencies, there is only a low output voltage in order to maintain the motor flux. However, the output voltage can be too low in order to achieve the following:
- magnetize the induction motor.
- hold the load.
- compensate for losses in the system.
This is the reason that the output voltage can be increased using p1310.
The voltage boost can be used for both linear as well as square-law U/f characteristics.

**Dependency:**
The current limit p0640 limits the boost.
For vector control, the permanent voltage boost (p1310) has no effect as the drive converter automatically sets the optimum operating conditions.
Refer to: p1300, p1311, p1312, r1315

**Notice:**
The voltage boost increases the motor temperature (particularly at zero speed).

**Note:**
The voltage boost is only effective for U/f control (p1300).
The boost values are combined with one another if the permanent voltage boost (p1310) is used in conjunction with other boost parameters (acceleration boost (p1311), voltage boost for starting (p1312)).
However, these parameters are assigned the following priorities: p1310 > p1311, p1312

---

**p1311[0...n]**  
**Voltage boost at acceleration / U_boost accelerate**

<table>
<thead>
<tr>
<th>ACCESS LEVEL</th>
<th>DATA TYPE</th>
<th>DYNAMIC INDEX</th>
<th>P-GROUP</th>
<th>NOT FOR MOTOR TYPE</th>
<th>MIN</th>
<th>MAX</th>
<th>FACTORY SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>U/f open-loop control</td>
<td>-</td>
<td>0.0 [%]</td>
<td>250.0 [%]</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
p1311 only results in a voltage boost when accelerating and generates a supplementary torque to accelerate the load.
The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.
The magnitude of the boost in Volt at a frequency of zero is defined as follows:
Voltage boost [V] = 1.732 * p0305 (rated motor current [A]) x r0395 (stator/primary section resistance [ohm]) x p1311 (voltage boost when accelerating [%]) / 100 %

**Dependency:**
The current limit p0640 limits the boost.
Refer to: p1300, p1310, p1312, r1315

**Notice:**
The voltage boost results in a higher motor temperature increase.

**Note:**
The voltage boost when accelerating can improve the response to small, positive setpoint changes.
Assigning priorities for the voltage boosts: refer to p1310

---

**p1312[0...n]**  
**Voltage boost when starting / U_boost starting**

<table>
<thead>
<tr>
<th>ACCESS LEVEL</th>
<th>DATA TYPE</th>
<th>DYNAMIC INDEX</th>
<th>P-GROUP</th>
<th>NOT FOR MOTOR TYPE</th>
<th>MIN</th>
<th>MAX</th>
<th>FACTORY SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>U/f open-loop control</td>
<td>-</td>
<td>0.0 [%]</td>
<td>250.0 [%]</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Setting for an additional voltage boost when powering-up, however, only for the first acceleration phase.
The voltage boost becomes effective for a positive setpoint increase and disappears as soon as the setpoint has been reached. The build-up and withdrawal of the voltage boost are smoothed.

**Dependency:**
The current limit p0640 limits the boost.
Refer to: p1300, p1310, p1311, r1315

**Notice:**
The voltage boost results in a higher motor temperature increase.

**Note:**
The voltage boost when accelerating can improve the response to small, positive setpoint changes.
Assigning priorities for the voltage boosts: refer to p1310
**r1315 Voltage boost total / U_boost total**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1315</td>
<td>Displays the total resulting voltage boost in volt.</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>U/f open-loop control</td>
<td>- [Vrms]</td>
<td>- [Vrms]</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td>r1315 = p1310 + p1311 + p1312</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p1310, p1311, p1312

**p1320[0...n] U/f control programmable characteristic frequency 1 / Uf char f1**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1320[0...n]</td>
<td>The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>U/f open-loop control</td>
<td>-</td>
<td>0.00 [Hz]</td>
<td>3000.00 [Hz]</td>
<td></td>
</tr>
<tr>
<td>p1320 &lt;= p1322 &lt;= p1324 &lt;= p1326</td>
<td>The following applies to the frequency values: p1320 &lt;= p1322 &lt;= p1324 &lt;= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

**p1321[0...n] U/f control programmable characteristic voltage 1 / Uf char U1**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1321[0...n]</td>
<td>The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>U/f open-loop control</td>
<td>-</td>
<td>0.00 [Vrms]</td>
<td>10000.0 [Vrms]</td>
<td></td>
</tr>
<tr>
<td>p1321 &lt;= p1322 &lt;= p1324 &lt;= p1326</td>
<td>The following applies to the frequency values: p1320 &lt;= p1322 &lt;= p1324 &lt;= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

**p1322[0...n] U/f control programmable characteristic frequency 2 / Uf char f2**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1322[0...n]</td>
<td>The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310.</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>U/f open-loop control</td>
<td>-</td>
<td>0.00 [Hz]</td>
<td>3000.00 [Hz]</td>
<td></td>
</tr>
<tr>
<td>p1320 &lt;= p1322 &lt;= p1324 &lt;= p1326</td>
<td>The following applies to the frequency values: p1320 &lt;= p1322 &lt;= p1324 &lt;= p1326. Otherwise, a standard characteristic is used that contains the rated motor operating point.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Refer to: p1300, p1310, p1311, p1321, p1322, p1323, p1324, p1325, p1326, p1327</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327.

The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.
**Dependency:**
The following applies to the frequency values: $p_{1320} \leq p_{1322} \leq p_{1324} \leq p_{1326}$. Otherwise, a standard characteristic is used that contains the rated motor operating point.
Refer to: p1310, p1311, p1320, p1321, p1323, p1324, p1325, p1326, p1327

**p1323[0...n]**  
**U/f control programmable characteristic voltage 2 / Uf char U2**

<table>
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<th>Calculated: CALC_MOD_ALL</th>
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<tbody>
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<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6300</td>
<td></td>
</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [Vrms]</td>
<td>10000.0 [Vrms]</td>
<td>0.0 [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the second point along the characteristic.

**Dependency:**
Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

**p1324[0...n]**  
**U/f control programmable characteristic frequency 3 / Uf char f3**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: CALC_MOD_ALL</th>
<th>Access level: 3</th>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6300</td>
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</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Hz]</td>
<td>3000.00 [Hz]</td>
<td>0.00 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the third point along the characteristic.

**Dependency:**
The following applies to the frequency values: $p_{1320} \leq p_{1322} \leq p_{1324} \leq p_{1326}$. Otherwise, a standard characteristic is used that contains the rated motor operating point.
Refer to: p1310, p1311, p1320, p1321, p1322, p1324, p1325, p1326, p1327

**p1325[0...n]**  
**U/f control programmable characteristic voltage 3 / Uf char U3**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: CALC_MOD_ALL</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6300</td>
<td></td>
</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [Vrms]</td>
<td>10000.0 [Vrms]</td>
<td>0.0 [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the third point along the characteristic.

**Dependency:**
Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326, p1327

**p1326[0...n]**  
**U/f control programmable characteristic frequency 4 / Uf char f4**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: CALC_MOD_REG</th>
<th>Access level: 3</th>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6300</td>
<td></td>
</tr>
<tr>
<td>P-Group: U/f open-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Hz]</td>
<td>10000.00 [Hz]</td>
<td>0.00 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the frequency of the fourth point along the characteristic.

**Dependency:**
Selects the freely programmable characteristic using $p_{1300} = 3$.
The following applies for the frequency values:
$p_{1320} \leq p_{1322} \leq p_{1324} \leq p_{1326}$
Otherwise, a standard characteristic is used that contains the rated motor operating point.
Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326, p1327

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Note: Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. For output frequencies above p1326, the characteristic is extrapolated with the gradient between the characteristic points p1324/p1325 and p1326/p1327. The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

**p1327[0...n]**  
**U/f control programmable characteristic voltage 4 / Uf char U4**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>CALC MOD REG</th>
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<tbody>
<tr>
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<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram: 6300</td>
</tr>
<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0 [Vrms]</td>
<td>10000.0 [Vrms]</td>
<td>0.0 [Vrms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** The programmable characteristic for the U/f control is defined using 4 points and 0 Hz/p1310. This parameter specifies the voltage of the fourth point along the characteristic.

**Dependency:** Selects the freely programmable characteristic using p1300 = 3. Refer to: p1310, p1311, p1320, p1321, p1322, p1323, p1324, p1325, p1326

**Note:** Linear interpolation is carried out between the points 0 Hz/p1310, p1320/p1321 ... p1326/p1327. The voltage boost when accelerating (p1311) is also applied to the freely programmable U/f characteristic.

**p1330[0...n]**  
**CI: U/f control independent voltage setpoint / Uf U_set independ.**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
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</thead>
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<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
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<td>Expert list: 1</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the voltage setpoint for U/f control with an independent voltage setpoint (p1300 = 19).

**Dependency:** Selects the U/f control with independent voltage setpoint via p1300 = 19. Refer to: p1300

**p1333[0...n]**  
**U/f control FCC starting frequency / U/f FCC f_start**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>CALC MOD_ALL</th>
<th>Access level: 3</th>
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<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td>Func. diagram: 6310</td>
</tr>
<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
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<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [Hz]</td>
<td>3000.00 [Hz]</td>
<td>0.00 [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the starting frequency at which FCC (Flux Current Control) is activated.

**Dependency:** The correct operating mode must be set (p1300 = 1, 6).

**Warning:** An excessively low value can result in instability.

**Note:** For p1333 = 0 Hz, the FCC starting frequency is automatically set to 6 % of the rated motor frequency.

**p1334[0...n]**  
**U/f control slip compensation starting frequency / Slip comp start**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>CALC MOD_ALL</th>
<th>Access level: 3</th>
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<tbody>
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<td>DDS, p0180</td>
<td>Func. diagram: 6310</td>
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<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [Hz]</td>
<td>3000.00 [Hz]</td>
<td>0.00 [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the starting frequency of the slip compensation.
Note: For p1334 = 0, the starting frequency of the slip compensation is automatically set to 6 % of the rated motor frequency.

\[
p_{1335}[0...n]\]

**Slip compensation, scaling / Slip comp scal**

VECTOR_G

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
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<tr>
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<td>DDS, p0180</td>
</tr>
<tr>
<td>Func. diagram:</td>
<td>1690, 6310</td>
</tr>
<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>600.0 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the setpoint for slip compensation in [%] referred to r0330 (motor rated slip).

\[p_{1335} = 0.0 \%: \text{Slip compensation de-activated.}\]

\[p_{1335} = 100.0 \%: \text{The slip is completely compensated.}\]

**Dependency:** Prerequisite for a precise slip compensation for \(p_{1335} = 100 \%\) are the precise motor parameters (p0350 ... p0360).

If the parameters are not precisely known, a precise compensation can be achieved by varying \(p_{1335}\).

For U/f control types with Eco optimization (4 and 7), the slip compensation must be activated in order to guarantee correct operation.

**Note:**

- The purpose of slip compensation is to maintain a constant motor speed regardless of the applied load. The fact that the motor speed decreases with increasing load is a typical characteristic of induction motors.
- For synchronous motors, this effect does not occur and the parameter has no effect in this case.
- For the open-loop control modes \(p_{1300} = 5\) and \(6\) (textile sector), the slip compensation is internally disabled in order to be able to precisely set the output frequency.

If \(p_{1335}\) is changed during commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of \(p_{1335}\) have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).

\[
p_{1336}[0...n]\]

**Slip compensation limit value / Slip comp lim val**

VECTOR_G

<table>
<thead>
<tr>
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<th>U, T</th>
</tr>
</thead>
<tbody>
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<td>Func. diagram:</td>
<td>6310</td>
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<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
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<td>Units group:</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>Min</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>600.00 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>250.00 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the limit value for slip compensation in [%] referred to r0330 (motor rated slip).

\[\text{If } p_{1335}\text{ is changed during commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of } p_{1335}\text{ have been changed by a parameter that was set when the drive was commissioned (e.g. p0300).}\]

\[
r_{1337}\]

**CO: Actual slip compensation / Slip comp act val**

VECTOR_G

<table>
<thead>
<tr>
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<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
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<tr>
<td>Dynamic index:</td>
<td>-</td>
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<tr>
<td>Func. diagram:</td>
<td>6310</td>
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<tr>
<td>P-Group:</td>
<td>U/f open-loop control</td>
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<tr>
<td>Units group:</td>
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</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
</tr>
<tr>
<td>Max</td>
<td>- [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:** Displays the actual compensated slip [%] referred to r0330 (rated motor slip).

**Dependency:** \(p_{1335} > 0 \%: \text{Slip compensation active.}\)

Refer to: \(p_{1335}\)
### p1338[0...n]
**U/f mode resonance damping gain / Uf Res_damp gain**

| Description | Sets the gain for resonance damping for U/f control.  
| Dependency | Refer to: p1300, p1339, p1349  
| Note | The resonance damping function dampens active current oscillations that frequency occur under no-load conditions.  
| | The resonance damping is active in a range from approximately 6 % of the rated motor frequency (p0310). The shutoff frequency is determined by p1349.  
| | For the open-loop control modes p1300 = 5 and 6 (textile sectors), the resonance damping is internally disabled in order that the output frequency can be precisely set. |

| p1339[0...n] | U/f mode resonance damping filter time constant / Uf Res_damp T  
| Description | Sets the filter time constant for resonance damping for U/f control.  
| Dependency | Refer to: p1300, p1338, p1349  

| p1340[0...n] | I_max frequency controller proportional gain / I_max_ctrl Kp  
| Description | Sets the proportional gain of the I_max frequency controller.  
| | The I_max controller reduces the drive converter output current if the maximum current (r0067) is exceeded.  
| | In the U/f operating modes (p1300) for the I_max control, one controller is used that acts on the output frequency and one controller that acts on the output voltage. The frequency controller reduces the current by decreasing the converter output frequency. The frequency is reduced down to a minimum value (equaling twice rated slip). If the overcurrent condition cannot be successfully resolved using this measure, then the drive converter output voltage is reduced using the I_max voltage controller. Once the overcurrent condition has been resolved, the drive is accelerated along the ramp set in p1120 (ramp-up time). |
| Dependency | In the U/f modes (p1300) for textile applications and for external voltage setpoints, only the I_max voltage controller is used.  
| Notice | When de-activating the I_max controller, the following must be carefully observed:  
| | When the maximum current (r0067) is exceeded, the output current is no longer reduced, however, overcurrent alarm messages are generated. The drive is shut down if the overcurrent limit (r0209) is exceeded. |
| Note | The I_max limiting controller becomes ineffective if the ramp-function generator is de-activated with p1122 = 1.  
| | p1341 = 0: I_max frequency controller de-activated and I_max voltage controller activated over the complete speed range. |
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1341[0...n]</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**I_max frequency controller integral time / I_max_ctrl Tn** |
| VECTOR_G | Can be changed: U, T | Calculated: CALC_MOD_CON | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: DDS, p0180 | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0.000 [s] | Max 50.000 [s] | Factory setting 0.300 [s] |
| **Dependency:** | Sets the integral time for the I_max frequency controller. | Refer to: p1340 |
| **Note:** | | When p1341 = 0, the current limiting controller influencing the frequency is de-activated and only the current limiting controller influencing the output voltage remains active (p1345, p1346). |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1343</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**CO: I_max controller frequency output / I_max_ctrl f_outp** |
| VECTOR_G | Can be changed: - | Calculated: - | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: 3_1 | Unit selection: p0505 |
| Not for motor type: - | Scaling: p2000 | Expert list: 1 |
| Min - [rpm] | Max - [rpm] | Factory setting |
| **Dependency:** | Displays the effective frequency limit. | Refer to: p1340 |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1344</strong></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
**I_max controller voltage output / I_max_ctrl U_outp** |
| VECTOR_G | Can be changed: - | Calculated: - | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: 5_1 | Unit selection: p0505 |
| Not for motor type: - | Scaling: p2001 | Expert list: 1 |
| Min - [Vrms] | Max - [Vrms] | Factory setting |
| **Dependency:** | Displays the amount by which the converter output voltage is reduced. | Refer to: p1340 |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td><strong>p1345[0...n]</strong></td>
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</tr>
</tbody>
</table>
**I_max voltage controller proportional gain / I_max_U_ctrl Kp** |
| VECTOR_G | Can be changed: U, T | Calculated: CALC_MOD_CON | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: DDS, p0180 | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0.000 | Max 100000.000 | Factory setting 0.000 |
| **Dependency:** | Sets the proportional gain for the I_max voltage controller. | Refer to: p1340 |
| **Note:** | | The controller settings are also used in the current controller of the DC braking (refer to p1232). |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1346[0...n]</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**I_max voltage controller integral time / I_max_U_ctrl Tn** |
| VECTOR_G | Can be changed: U, T | Calculated: CALC_MOD_CON | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: DDS, p0180 | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0.000 [s] | Max 50.000 [s] | Factory setting 0.030 [s] |
| **Dependency:** | Sets the integral time for the I_max voltage controller. | Refer to: p1340 |

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
**Parameters**

**List of parameters**

| Dependency: | Refer to: p1340
Note: | The controller settings are also used in the current controller of the DC braking (refer to p1232). For p1346 = 0, the following applies: The integral time of the I_max voltage controller is de-activated.

| r1348 CO: U/f control Eco factor actual value / U/f Eco fac act v |
|---|---|---|---|
| Can be changed: - | Calculated: - | Access level: 4 |
| Data type: FloatingPoint32 | Dynamic index: - | Func. diagram: 6300 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min [-%] | Max [-%] | Factory setting |

| r1349 [0...n] U/f mode resonance damping maximum frequency / Uf res_damp f_max |
|---|---|---|---|
| Can be changed: U, T | Calculated: CALC_MOD_ALL | Access level: 3 |
| Data type: FloatingPoint32 | Dynamic index: DDS, p0180 | Func. diagram: 6310 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0.00 [Hz] | Max 3000.00 [Hz] | Factory setting 0.00 [Hz] |

| r1350[0...n] Soft starting / Soft starting |
|---|---|---|---|
| Can be changed: U, T | Calculated: - | Access level: 3 |
| Data type: Integer16 | Dynamic index: DDS, p0180 | Func. diagram: 1690 |
| P-Group: U/f open-loop control | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0 | Max 1 | Factory setting 0 |

| Description: | Displays the economic factor determined for optimizing motor consumption.
Dependency: | Refer to: p1335
Note: | The value is only determined for operating modes with Economic (p1300 = 4, 7). For p1346 = 0, the following applies: The integral time of the I_max voltage controller is de-activated.

| Description: | Sets the maximum output frequency for resonance damping for U/f control. Resonance damping is inactive above this output frequency.
Dependency: | Refer to: p1338, p1339
Note: | For p1349 = 0, the changeover limit is automatically set to 95 % of the rated motor frequency - however, to a max. of 45 Hz.

| Description: | Sets whether the voltage is continuously increased during the magnetizing phase (p1350 = 1, On) or whether it jumps directly to the voltage boost (p1350 = 0, Off).
Value: | 0: OFF
1: ON |
Note: | The settings for this parameter have the following advantages and disadvantages:
0 = off (jump directly to voltage boost)
Advantage: Flux is established quickly -> torque is quickly available
Disadvantage: The motor can move while it is being magnetized
1 = on (voltage is continually established)
Advantage: The motor is unlikely to rotate
Disadvantage: The flux is established slower -> torque is available later
## List of parameters

### Description:
Sets the frequency setting value at the slip compensation output for starting up with motor holding brake.

### Dependency:
When setting p1351 > 0, then slip compensation is automatically activated (p1335 = 100 %).

### Notice:
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

### Note:
A value of 100% corresponds to the motor rated slip (r0330).

### p1351[0...n]
<table>
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<tbody>
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<tr>
<td>P-Group: U/f open-loop control</td>
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<td>Units group: -</td>
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<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
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<tr>
<td>Scaling: PERCENT</td>
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<tr>
<td>Expert list: 1</td>
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<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
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<td>-300.00 [%]</td>
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<td>300.00 [%]</td>
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<td>0.00 [%]</td>
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### p1356[0...n]
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
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<tr>
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<tr>
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<td>Units group: -</td>
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<tr>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type: -</td>
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<tr>
<td>Scaling: p2005</td>
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<td>Expert list: 1</td>
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<tr>
<td>Min</td>
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<td>Max</td>
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<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
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</table>

### p1358[0...n]
<table>
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</tr>
</thead>
<tbody>
<tr>
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</tr>
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<td>Can be changed: U, T</td>
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<td>P-Group: U/f open-loop control</td>
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<td>Unit selection: -</td>
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<tr>
<td>Scaling: -</td>
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<td>Min</td>
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<tr>
<td>Max</td>
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<td>Factory setting</td>
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<tr>
<td>1</td>
</tr>
<tr>
<td>0</td>
</tr>
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</table>

### r1359
<table>
<thead>
<tr>
<th>CO: Angular difference / Angular difference</th>
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</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
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<tr>
<td>Can be changed: -</td>
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<tr>
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<td>Func. diagram: -</td>
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<td>P-Group: U/f open-loop control</td>
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<td>Units group: -</td>
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<td>Unit selection: -</td>
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</tbody>
</table>

### r1360
<table>
<thead>
<tr>
<th>Braking chopper braking resistor cold / Br_chop R cold</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
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<tr>
<td>Calculated: CALC_MOD_ALL</td>
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<td>Func. diagram: -</td>
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<tr>
<td>P-Group: U/f open-loop control</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Scaling: -</td>
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<td>Expert list: 1</td>
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<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000 [ohm]</td>
</tr>
<tr>
<td>10.000 [ohm]</td>
</tr>
<tr>
<td>0.000 [ohm]</td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

**Dependency:**
Select operation with braking resistor: p1300 = 15
Refer to: p1362, r1363, p1364
Refer to: A06921, F06922

### p1362[0...1]
**Braking chopper activation threshold / Br_chop thresh**

**VECTOR_G**

**Can be changed:** U, T  
**Calculated:** CALC_MOD_ALL  
**Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** U/f open-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0 [V]  

**Max**  
1158 [V]  

**Factory setting**  
[0] 0 [V]  
[1] 60 [V]

**Description:**
Sets the activation threshold for the brake chopper.
The hysteresis defines the range of the output voltage from zero up to the maximum voltage.

**Index:**
[0] = Braking chopper threshold value  
[1] = Braking chopper hysteresis

**Dependency:**
Select operation with braking resistor: p1300 = 15
Refer to: p1360, r1363, p1364
Refer to: A06921, F06922

### r1363
**CO: Braking chopper output voltage / Br_chop U_output**

**VECTOR_G**

**Can be changed:** -  
**Calculated:** -  
**Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Displays, signals  
**Units group:** 5_1  
**Unit selection:** p0505

**Not for motor type:** -  
**Scaling:** p2001  
**Expert list:** 1

**Min**  
- [Vrms]  

**Max**  
- [Vrms]  

**Factory setting**  
- [Vrms]

**Description:**
Displays the actual power unit output voltage (Motor Module) in braking chopper operation.

**Dependency:**
Select operation with braking resistor: p1300 = 15
Refer to: p1360, p1362, p1364
Refer to: A06921, F06922

### p1364
**Braking chopper resistor asymmetry / Br_chop R asym**

**VECTOR_G**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** U/f open-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1

**Min**  
0.00 [%]  

**Max**  
100.00 [%]  

**Factory setting**  
25.00 [%]

**Description:**
Sets the percentage value for the asymmetry detection for the braking chopper.

**Dependency:**
Select operation with braking resistor: p1300 = 15
Refer to: p1360, p1362, r1363
Refer to: F06922

**Note:**
Zero means no asymmetry detection.
### List of parameters

#### p1400[0...n] Speed control configuration / n_ctrl config

**VECTOR_G (n/M)**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Automatic Kp/Tn adaptation active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>01</td>
<td>Sensorless vector control freeze I comp</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>02</td>
<td>Acceleration pre-control source</td>
<td>External (p1495)</td>
<td>Internal (n_set)</td>
<td>6031</td>
</tr>
<tr>
<td>03</td>
<td>Reference model speed setpoint, I component</td>
<td>ON</td>
<td>OFF</td>
<td>6031</td>
</tr>
<tr>
<td>05</td>
<td>Kp/Tn adaptation active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
</tr>
<tr>
<td>14</td>
<td>Torque pre-control</td>
<td>Always active</td>
<td>For n_ctrl enab</td>
<td>6060</td>
</tr>
<tr>
<td>15</td>
<td>Sensorless vector control, speed pre-control</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
</tr>
<tr>
<td>16</td>
<td>I component for limiting</td>
<td>Enable</td>
<td>Hold</td>
<td>6030</td>
</tr>
<tr>
<td>19</td>
<td>Anti-windup for integral component</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
</tr>
<tr>
<td>20</td>
<td>Acceleration model</td>
<td>ON</td>
<td>OFF</td>
<td>6030</td>
</tr>
</tbody>
</table>

**Description:**

Sets the configuration for the closed-loop speed control.

**Note:**

- Re bit 01: When the bit is set, the I component of the speed controller is kept when changing into the open-loop controlled mode.
- Re bit 16: When the bit is set, the integral component of the speed controller is only held if it reaches the torque limit.
- Re bit 19: When this bit is set, speed overshoots when accelerating along the torque limit and for load surges are reduced. If the setpoint torque reaches the torque limit, then the integral component is set to the difference between the torque limit and P component.
- Re bit 20: The acceleration model for the speed setpoint is only active for encoderless vector control if p1496 is not zero.

#### p1401[0...n] Flux control configuration / Flux ctrl config

**VECTOR_G (n/M)**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Flux setpoint soft starting active</td>
<td>Yes</td>
<td>No</td>
<td>6722, 6723</td>
</tr>
<tr>
<td>01</td>
<td>Flux setpoint differentiation active</td>
<td>Yes</td>
<td>No</td>
<td>6723, 6726</td>
</tr>
<tr>
<td>02</td>
<td>Flux build-up control active</td>
<td>Yes</td>
<td>No</td>
<td>6722, 6723, 6725, 6726</td>
</tr>
<tr>
<td>03</td>
<td>Flux characteristic, load-dependent</td>
<td>Yes</td>
<td>No</td>
<td>6725</td>
</tr>
<tr>
<td>04</td>
<td>Flux controller (ASM with encoder)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Flux impression (ASM with encoder) with model chngov</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Quick magnetizing</td>
<td>Yes</td>
<td>No</td>
<td>6722</td>
</tr>
</tbody>
</table>

**Description:**

Sets the configuration for flux setpoint control.
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Speed-following error correction active</td>
<td>Sets the configuration for the closed-loop control and the motor model.</td>
</tr>
<tr>
<td>02</td>
<td>Current controller adaptation active</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Changeover current model/voltage model with speed setpoint</td>
<td></td>
</tr>
</tbody>
</table>

Note:

Re bit 00:

When the bit is set, the speed following error is compensated that is obtained as a result of the smoothing time constant in p1441.

Re bit 02:

The current controller adaptation (p0391 ... p0393) is only calculated when the bit is set.
### r1406.4...15  
**CO/BO: Control word speed controller / STW n_ctrl**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>Hold speed controller I component</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Set speed controller I component</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Travel to fixed stop</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Droop enable</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Torque control active</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Set speed adaptation controller I component</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### r1407.0...17  
**CO/BO: Status word speed controller / ZSW n_ctrl**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>U/f control active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Encoderless operation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Torque control active</td>
<td>Yes</td>
<td>No</td>
<td>6060, 6030, 8010</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Speed control active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Speed controller I component frozen</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Speed controller I component set</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Torque limit reached</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Upper torque limit active</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Lower torque limit active</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Droop enabled</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Speed setpoint limited</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Ramp-function generator set</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Encoderless operation due to a fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I/f control active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Torque limit reached (without pre-control)</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Speed limiting control active</td>
<td>Yes</td>
<td>No</td>
<td>6640</td>
<td></td>
</tr>
</tbody>
</table>

### r1408.0...15  
**CO/BO: Status word current controller / ZSW I_ctrl**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>I/f control active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Encoderless operation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Torque control active</td>
<td>Yes</td>
<td>No</td>
<td>6060, 6030, 8010</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Speed control active</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Speed controller I component frozen</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Speed controller I component set</td>
<td>Yes</td>
<td>No</td>
<td>6040</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Torque limit reached</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Upper torque limit active</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Lower torque limit active</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Droop enabled</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Speed setpoint limited</td>
<td>Yes</td>
<td>No</td>
<td>6030</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Ramp-function generator set</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Encoderless operation due to a fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>I/f control active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Torque limit reached (without pre-control)</td>
<td>Yes</td>
<td>No</td>
<td>6060</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Speed limiting control active</td>
<td>Yes</td>
<td>No</td>
<td>6640</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Current ctrl act</td>
<td>Active</td>
<td>Not active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Id control, I component limiting</td>
<td>Active</td>
<td>Not active</td>
<td>6714</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Voltage limiting</td>
<td>Active</td>
<td>Not active</td>
<td>6714</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Speed adaptation, limiting</td>
<td>Active</td>
<td>Not active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Speed adaptation, speed deviation</td>
<td>Out tolerance</td>
<td>In tolerance</td>
<td>6719</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Motor stalled</td>
<td>Yes</td>
<td>No</td>
<td>6719, 8018</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Separately excited synchronous motor is excited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Current model FEM: magnetizing excitation current limited to 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Excitation current differential exceeded</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

For operation with speed encoder, this bit is set as a result of steps/jumps in the speed signal (see p0492) or due to deviations at the adaptation controller output (see p1744).

**p1416[0...n]**

**Speed setpoint filter 1 time constant / n_set_filt 1 T**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 1700, 6030</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>5000.00 [ms]</td>
<td>0.00 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the time constant for the speed setpoint filter 1 (PT1).

**p1428[0...n]**

**Speed pre-control balancing dead time / n_prectrBal_t_dead**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6031</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.0</td>
<td>3.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the dead time to symmetrize the speed setpoint for active torque pre-control.

The selected multiplier refers to the speed controller clock cycle (dead time= p1428 * p0115[1]).

**Dependency:**

In conjunction with p1429, this parameter can emulate the characteristics of how the torque is established (dynamic response of closed current control loop).

The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, a fixed dead time is used.

Refer to: p1429, p1511

**p1429[0...n]**

**Speed pre-control balancing time constant / n_prectrBal_t**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 5030, 5042, 5210, 6031</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>10000.00 [ms]</td>
<td>0.00 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the time constant (PT1) for symmetrizing the speed setpoint for active torque pre-control.

**Dependency:**

In conjunction with p1428, this parameter can emulate the characteristics of how torque is established (dynamic response of the closed current control loop).
For VECTOR (r0107) the following applies:
The parameter is only effective if the acceleration model is supplied using external acceleration signals (p1400.2 = 1). For p1400.2 = 0, time constant p1442 (or p1452 for sensorless vector control) is used.
Refer to: p1428, p1511

### r1431

**CO: Speed pre-control to motor model / n_prectrl mot_mod**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Units group:** 3_1  
**Expert list:** 1

**P-Group:** Closed-loop control  
**Not for motor type:** REL

**Min**  
- [rpm]

**Max**  
- [rpm]

**Factory setting**  
- [rpm]

**Description:** Displays the speed setpoint for pre-controlling the motor model with sensorless vector control.

**Note:** With p1400 bit 15 = 0 or encoderless torque control, the pre-control signal is kept continuously in the range of the voltage model.

### p1433[0...n]

**Speed controller reference model natural frequency / n_ctrl RefMod fn**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Units group:** 3_1  
**Expert list:** 1

**P-Group:** Closed-loop control  
**Not for motor type:** REL

**Min**  
- [Hz]

**Max**  
8000.0 [Hz]

**Factory setting**  
0.0 [Hz]

**Description:** Sets the natural frequency of a PT2 element for the reference model of the speed controller.

**Recommend.:** The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

**Dependency:** Together with p1434 and p1435, the characteristics (in the time domain) of the closed-loop speed control (P) can be emulated.

For VECTOR (r0107) the following applies:
The reference model is activated with p1400.3 = 1. For sensorless vector control (p1300 = 20) the reference model is disabled in open-loop speed controlled operation (refer to p1755).

Refer to: p1434, p1435

### p1434[0...n]

**Speed controller reference model damping / n_ctrl RefMod D**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Units group:** 3_1  
**Expert list:** 1

**P-Group:** Closed-loop control  
**Not for motor type:** REL

**Min**  
0.000

**Max**  
5.000

**Factory setting**  
1.000

**Description:** Sets the damping of a PT2 element for the reference model of the speed controller.

**Recommend.:** The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

**Dependency:** In conjunction with p1433 and p1435, the characteristics (in time) of the P-controlled speed control loop can be emulated.

For VECTOR (r0107) the following applies:
The reference model is activated with p1400.3 = 1.

Refer to: p1433, p1435
### p1435[0...n] Speed controller reference model dead time / n_ctrRefMod t_dead

- **VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Closed-loop control
- **Not for motor type:** REL
- **Min:** 0.00
- **Max:** 3.00

**Description:**
Sets the "fractional" dead time for the reference model of the speed controller. This parameter emulates the computing dead time of the proportionally controlled speed control loop. The selected multiplier refers to the speed controller clock cycle (dead time = p1435 * p0115[1]).

**Recommend:**
The reference model is correctly set when the characteristics of p1439 (reference model output) and p1445 (actual speed value) are virtually identical when the I component of the speed controller is disabled.

**Dependency:**
In conjunction with p1433 and p1434, the characteristics (in time) of the P-controlled speed control loop can be emulated.

For VECTOR (r0107) the following applies:
The reference model is activated with p1400.3 = 1.
Refer to: p0115, p1433, p1434

### r1436 CO: Speed controller reference model speed setpoint output / RefMod n_set outp

- **VECTOR_G (n/M)**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Closed-loop control
- **Not for motor type:** REL
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**
Displays the speed setpoint at the output of the reference model.

**Dependency:**
For VECTOR (r0107) the following applies:
The reference model is activated with p1400.3 = 1.

### p1437[0...n] CI: Speed controller, reference model I component input / n_ctrRefMod I_comp

- **VECTOR_G (n/M)**
- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** Closed-loop control
- **Not for motor type:** REL
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for speed setpoint for the integral component of the speed controller.

**Dependency:**
The reference model is activated with p1400.3 = 1.
Refer to: p1400

**Caution:**
In should be ensured that a speed setpoint is selected as signal source that corresponds to the setpoint for the P component of the speed controller.

### r1438 CO: Speed controller, speed setpoint / n_ctrl n_set

- **VECTOR_G (n/M)**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Closed-loop control
- **Not for motor type:** REL
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**
Displays the speed setpoint after setpoint limiting for the P component of the speed controller.
## List of parameters

**For U/f operation, the value that is displayed is of no relevance.**

### Dependency:
Refer to: r1439

### Note:
In the standard state (the reference model is de-activated), \( r_{1438} = r_{1439} \).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1439</td>
<td>Speed setpoint, I component / ( n_{\text{set}} ) ( I_{\text{comp}} )</td>
<td>3</td>
</tr>
<tr>
<td>p1440[0...n]</td>
<td>CI: Speed controller speed actual value / ( n_{\text{ctrl}} ) ( n_{\text{act}} )</td>
<td>3</td>
</tr>
<tr>
<td>p1441[0...n]</td>
<td>Actual speed smoothing time / ( n_{\text{act}} ) ( T_{\text{smooth}} )</td>
<td>3</td>
</tr>
</tbody>
</table>

### Description:
Displays the speed setpoint for the I component of the speed controller (output of the reference model after the setpoint limiting).

### Dependency:
Refer to: r1438

### Note:
In the standard state (the reference model is de-activated), \( r_{1438} = r_{1439} \).

### Danger:
When using external speed actual values for the speed controller, for a direction of rotation change via \( p_{1821} = 1 \), then its polarity must also be changed, e.g. for an encoder DO via \( p_{0410} \). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

### Caution:
Speed control with encoder (\( p_{1300} = 21 \)):

- For the speed or position signal of the motor model there must always be a motor encoder available (evaluation via SMC/SMI, see \( p_{0400} \)). The actual speed of the motor \( (r_{0061}) \) and the position data for synchronous motors continue to come from this motor encoder and are not affected by the setting of \( p_{1440} \).
- Interconnection of \( p_{1440} \):
  - If connector input \( p_{1440} \) is interconnected with an external speed actual value, the identical scaling of the speed should be observed \( (p_{2000}) \).

### Notice:
Speed control without encoder (\( p_{1300} = 20 \)):

- Dependent upon the transmission path of the external speed signal there will be dead times which have to be taken into account when setting the speed controller parameters \( (p_{1470}, p_{1472}) \) and can lead to dynamic losses accordingly. It is for this reason that signal transmission times have to be kept as low as possible.
- So that the speed controller can also work at standstill, set \( p_{1750.2} = 1 \) (closed-loop operation from zero speed for passive loads). If you do not make this setting, operation will switch to open-loop speed control in the low speed range, switching the closed-loop speed controller off and rendering the measured actual speed ineffective.

### Note:
Speed control with encoder (\( p_{1300} = 21 \)):

- An external speed signal should, on the average, correspond to the speed of the motor encoder \( (r_{0061}) \).

### Data type and Function diagrams:
- **r1439**: FloatingPoint32, Dynamic index: -
- **p1440**: Unsigned32 / FloatingPoint32, Dynamic index: CDS, p0170
- **p1441**: FloatingPoint32, Dynamic index: DDS, p0180

### Units and Unit selection:
- **r1439**: Units group: 3_1, Unit selection: p0505, Expert list: 1
- **p1440**: Units group: -
- **p1441**: Units group: -

### Access levels:
- **r1439**: Access level: 3
- **p1440**: Access level: 3
- **p1441**: Access level: 3

### Default values:
- **r1439**: Min: 0rpm, Max: 0rpm, Factory setting: 0rpm
- **p1440**: Min: 0rpm, Max: 63rpm
- **p1441**: Min: 0.00 [ms], Max: 1000.00 [ms]
Parameters
List of parameters

Dependency: Refer to: r0063

Notice: Smoothing times above 20 ms are only possible if the drive is accelerated or braked with the appropriately long ramp-up/ramp-down times. Otherwise, significant torque errors can occur and there is the danger that the drive is powered down (tripped) with F07902 (motor stalled).

Note: The speed actual value should be smoothed for encoders with a low pulse number or for resolvers. After this parameter has been changed, we recommend that the speed controller is adapted and/or the speed controller settings checked Kp (p1460) and Tn (p1462).

<table>
<thead>
<tr>
<th>p1442[0...n]</th>
<th>Speed controller speed actual value smoothing time / n_ctr n_act T_smth</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: CALC_MOD_ALL Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 1700, 6040</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL Scaling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting 0.00 [ms] 32000.00 [ms] 4.00 [ms]</td>
<td></td>
</tr>
<tr>
<td>Description: Sets the smoothing time for the actual speed value of the speed controller for closed-loop control with encoder.</td>
<td></td>
</tr>
<tr>
<td>Note: The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r1443</th>
<th>CO: Speed controller speed actual value at actual value input / n_ctrl n_act inp</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6040</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 3_1 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: REL Scaling: p2000 Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting - [rpm] - [rpm] - [rpm]</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the speed actual value at the speed controller's free-wiring actual value input p1440.</td>
<td></td>
</tr>
<tr>
<td>Dependency: Refer to: p1440</td>
<td></td>
</tr>
<tr>
<td>Note: This speed signal is only used by the speed controller and not by the motor model.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r1444</th>
<th>Speed controller, speed setpoint steady-state (static) / n_ctrl n_set stat</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 5030</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 3_1 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: REL Scaling: p2000 Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting - [rpm] - [rpm] - [rpm]</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the sum of all speed setpoints that are present. The following sources are available for the displayed setpoint: - setpoint at the ramp-function generator input (r1119). - speed setpoint 1 (p1155). - speed setpoint 2 (p1160). - speed setpoint for the speed pre-control (p1430). - setpoint from DSC (for DSC active). - setpoint via PC (for master control active).</td>
<td></td>
</tr>
<tr>
<td>Dependency: Refer to: r1119, p1155, p1160</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

**r1445**  
**CO: Actual speed smoothed / n_act_smooth**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Can be changed:</th>
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<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>-</td>
<td>6040</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Closed-loop control</td>
<td>-</td>
<td>p0505</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>REL</td>
<td>p2000</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the actual smoothed actual speed for speed control.

**p1451[0...n]**  
**Motor model speed actual value smoothing time SLVC / Mot_mod n_act t_sm**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>ASM, PEM, REL</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>100 [ms]</td>
<td>4 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the smoothing time for the speed actual value calculated by the motor model in sensorless operation.

**p1452[0...n]**  
**Speed controller speed actual value smoothing time (SLVC) / n_C n_act T_s SLVC**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>1700, 6040</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>REL</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>32000.00 [ms]</td>
<td>10.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the smoothing time for the actual speed of the speed controller for encoderless closed-loop speed control.  
**Note:** The smoothing must be increased if there is gear backlash. For longer smoothing times, the integral time of the speed controller must also be increased (e.g. using p0340 = 4).

**r1454**  
**CO: Speed controller system deviation I component / n_ctrl sys dev Tn**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>-</td>
<td>6040</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Closed-loop control</td>
<td>-</td>
<td>p0505</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>REL</td>
<td>p2000</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [rpm]</td>
<td>- [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the system deviation of the I component of the speed controller.  
When the reference model is inactive (p1433 = 0 Hz), this parameter corresponds to the system deviation of the complete PI controller (r1454 = r0064).

**p1455[0...n]**  
**CI: Speed controller P gain adaptation signal / n_ctr adapt_sig Kp**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>6050</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>REL</td>
<td>PERCENT</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the source for the adaptation signal to additionally adapt the P gain of the speed controller.  
**Dependency:** Refer to: p1456, p1457, p1458, p1459
### p1456[0...n] Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow

**VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6050

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1

**Min**
- **Max**
- **Factory setting**

**0.00 [%]**
- **400.00 [%]**
- **0.00 [%]**

**Description:** Sets the lower starting point of the adaptation range for the additional adaptation of the P gain of the speed controller. The values are in % and refer to the set source of the adaptation signal.

**Dependency:** Refer to: p1455, p1457, p1458, p1459

**Note:** If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

### p1457[0...n] Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up

**VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6050

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1

**Min**
- **Max**
- **Factory setting**

**0.00 [%]**
- **400.00 [%]**
- **0.00 [%]**

**Description:** Sets the upper starting point of the adaptation range for the additional adaptation of the P gain of the speed controller. The values are in % and refer to the set source of the adaptation signal.

**Dependency:** Refer to: p1455, p1456, p1457, p1458

**Note:** If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

### p1458[0...n] Adaptation factor, lower / Adapt_factor lower

**VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6050

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1

**Min**
- **Max**
- **Factory setting**

**0.0 [%]**
- **200000.0 [%]**
- **100.0 [%]**

**Description:** Sets the adaptation factor before the adaptation range (0 % ... p1456) to additionally adapt the P gain of the speed/velocity controller.

**Dependency:** Refer to: p1455, p1456, p1457, p1459

**Note:** If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.

### p1459[0...n] Adaptation factor, upper / Adapt_factor upper

**VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6050

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1

**Min**
- **Max**
- **Factory setting**

**0.0 [%]**
- **200000.0 [%]**
- **100.0 [%]**

**Description:** Sets the adaptation factor after the adaptation range (> p1457) to additionally adapt the P gain of the speed/velocity controller.

**Dependency:** Refer to: p1455, p1456, p1457, p1458

**Note:** If the upper transition point p1457 of the speed controller adaptation is set to lower values than the lower transition p1456, then the controller gain below p1457 is adapted with p1459 and above p1456, with p1458.
**List of parameters**

**p1460[0...n]**  
**Speed controller P gain adaptation speed, lower / n_ctrl Kp n lower**

- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_CON  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dynamic index:** DDS, p0180  
- **func. diagram:** 1700, 6040  
- **Not for motor type:** REL  
- **Units group:** -  
- **Unit selection:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min:** 0.00  
- **Max:** 99999.000  
- **Factory setting:** 0.300

**Description:**  
Sets the P gain of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the P gain of the speed controller without adaptation (p1461 = 100 %).

**Dependency:**  
For p0528 = 1, the speed controller gain is represented without any dimensions.  
Refer to: p1461, p1464, p1465

**Note:**  
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

**p1461[0...n]**  
**Speed controller Kp adaptation speed, upper scaling / n_ctr Kp n up scal**

- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_CON  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** DDS, p0180  
- **func. diagram:** 6050  
- **Not for motor type:** REL  
- **Units group:** -  
- **Unit selection:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min:** 0.0 [%]  
- **Max:** 200000.0 [%]  
- **Factory setting:** 100.0 [%]

**Description:**  
Sets the P gain of the speed controller for the upper adaptation speed range (> p1465).

The entry is made referred to the P gain for the lower adaptation speed range of the speed controller (% referred to p1460).

**Dependency:**  
Refer to: p1460, p1464, p1465

**Note:**  
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition p1464, then the controller gain below p1465 is adapted with p1461. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

**p1462[0...n]**  
**Speed controller integral time adaptation speed lower / n_ctrl Tn n lower**

- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_CON  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dynamic index:** DDS, p0180  
- **func. diagram:** 1700, 5040, 5042, 6040  
- **Not for motor type:** REL  
- **Units group:** -  
- **Unit selection:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min:** 0.00 [ms]  
- **Max:** 100000.0 [ms]  
- **Factory setting:** 20.00 [ms]

**Description:**  
Sets the integration time of the speed controller before the adaptation speed range (0 ... p1464).

This value corresponds to the basic setting of the integral time of the speed controller without adaptation (p1461 = 100 %).

**Dependency:**  
Refer to: p1463, p1464, p1465

**Note:**  
The integral component is stopped if the complete controller output or the sum of controller output and torque pre-control reach the torque limit.

**p1463[0...n]**  
**Speed controller Tn adaptation speed, upper scaling / n_ctr Tn n up scal**

- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_CON  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** DDS, p0180  
- **func. diagram:** 6050  
- **Not for motor type:** REL  
- **Units group:** -  
- **Unit selection:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min:** 0.0 [%]  
- **Max:** 200000.0 [%]  
- **Factory setting:** 100.0 [%]

**Description:**  
Sets the integral time of the speed controller after the adaptation speed range (> p1465).

The entry is made referred to the integral time for the lower adaptation speed range of the speed controller (% referred to p1462).
### Speed controller adaptation speed, lower / \text{n\_ctrl n lower}

**p1464[0...n]**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_CON
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Unit selection:** p0505
- **Units group:** 3_1
- **Expert list:** 1
- **Scaling:** 
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
  - **Factory setting:** 0.00 [rpm]

**Description:**
Sets the lower adaptation speed of the speed controller.
No adaptation is effective below this speed.

**Dependency:**
Refer to: p1460, p1461, p1462, p1463, p1464

**Note:**
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

### Speed controller adaptation speed, upper / \text{n\_ctrl n upper}

**p1465[0...n]**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_CON
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Unit selection:** p0505
- **Units group:** 3_1
- **Expert list:** 1
- **Scaling:** 
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
  - **Factory setting:** 210000.00 [rpm]

**Description:**
Sets the upper adaptation speed of the speed controller.
No adaptation is effective above this speed.
For P gain, p1460 x p1461 is effective. For the integral time, p1462 x p1463 is effective.

**Dependency:**
Refer to: p1460, p1461, p1462, p1463, p1464

**Note:**
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller below p1465 is adapted with p1461 or p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.

### CI: Speed controller P-gain scaling / \text{n\_ctrl Kp scal}

**p1466[0...n]**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **Unit selection:** -
- **Units group:** -
- **Expert list:** 1
- **Scaling:** PERCENT
  - **Min:** -
  - **Max:** 1
  - **Factory setting:** 1

**Description:**
Sets the signal source for the scaling of the P gain of the speed controller.
This also makes the effective P gain (including adaptations) scalable.

### CO: Speed controller P-gain effective / \text{n\_ctrl Kp eff}

**r1468**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Unit selection:** -
- **Units group:** -
- **Expert list:** 1
- **Scaling:** -
  - **Min:** -
  - **Max:** -
  - **Factory setting:** -

**Description:**
Displays the effective P gain of the speed controller.
For p0528 = 1, the speed controller gain is represented without any dimensions. In this case, connector output signal r1468 is increased by a factor of 100 in order to improve the resolution.

**Dependency:**
Refer to: p1462, p1464, p1465

**Note:**
If the upper transition point p1465 of the speed controller adaptation is set to lower values than the lower transition point p1464, then the controller integral time below p1465 is adapted with p1463. This means that an adaptation can be implemented for low speeds without having to change the controller parameters.
### r1469 Speed controller integral time effective / n_ctr Tn eff

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1469</td>
<td>VECTOR_G (n/M)</td>
<td>3</td>
<td>Displays the effective integral time of the speed controller.</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [ms]</td>
<td>Max</td>
<td>- [ms]</td>
</tr>
</tbody>
</table>

### p1470[0...n] Speed controller encoderless operation P-gain / n_ctrl SLVC Kp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1470</td>
<td>VECTOR_G (n/M)</td>
<td>2</td>
<td>Sets the P gain for encoderless operation for the speed controller.</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.000</td>
<td>Max</td>
<td>999999.000</td>
</tr>
</tbody>
</table>

### p1472[0...n] Speed controller encoderless operation integral time / n_ctrl SLVC Tn

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1472</td>
<td>VECTOR_G (n/M)</td>
<td>2</td>
<td>Set the integral time for encoderless operation for the speed controller.</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [ms]</td>
<td>Max</td>
<td>100000.0 [ms]</td>
</tr>
</tbody>
</table>

### p1475[0...n] CI: Speed controller torque setting value for motor holding brake / n_ctrl M_sv MHB

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1475</td>
<td>VECTOR_G (n/M)</td>
<td>3</td>
<td>Sets the signal source for the torque setting value when starting up with motor holding brake.</td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
- The switching in of the torque setting value for the motor holding brake has a higher priority than the setting of the integrator value using p1477 and p1478.

**Note:**
- The setting of the integral output of the speed controller begins after magnetizing (see p0346, r0056 bit 4) and ends at the end of the brake control opening time p1216. A setting value of zero means that no setting procedure will take place.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1476[0...n]</strong></td>
<td><strong>BI: Speed controller hold integrator / n_ctrl integ stop</strong>&lt;br&gt;VECTOR_G (n/M)</td>
</tr>
<tr>
<td><strong>p1477[0...n]</strong></td>
<td><strong>BI: Speed controller set integrator value / n_ctrl integ set</strong>&lt;br&gt;VECTOR_G (n/M)</td>
</tr>
<tr>
<td><strong>p1478[0...n]</strong></td>
<td><strong>CI: Speed controller integrator setting value / n_ctr integ_setVal</strong>&lt;br&gt;VECTOR_G (n/M)</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>p1479[0...n]</td>
<td>CI: Speed controller integrator setting value scaling / n_ctrl I_val scal</td>
</tr>
<tr>
<td>r1480</td>
<td>CO: Speed controller PI torque output / n_ctrl PI-M_output</td>
</tr>
<tr>
<td>r1481</td>
<td>CO: Speed controller P torque output / n_ctrl P-M_output</td>
</tr>
<tr>
<td>r1482</td>
<td>CO: Speed controller I torque output / n_ctrl I-M_output</td>
</tr>
<tr>
<td>p1486[0...n]</td>
<td>CI: Droop compensation torque / Droop M_comp</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for scaling the integrator setting value (p1478) of the speed controller.

Dependency: Refer to: p1477, p1478

Description: Displays the torque setpoint at the output of the PI speed controller.

Description: Displays the torque setpoint at the output of the P speed controller.

Description: Displays the torque setpoint at the output of the I speed controller.

Description: Sets the signal source for the compensation torque to be output within the droop calculation. p1486 should be connected with the torque setpoint (corresponding to the selection p1488) of the drive, with which load equalization should take place.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Caution</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1487[0...n]</td>
<td>Droop compensation torque scaling / Droop M_comp scal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td>Data type:</td>
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<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6030</td>
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<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2000.0 [%]</td>
<td>2000.0 [%]</td>
<td>100.0 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the scaling for the compensation torque within the droop calculation.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p1488[0...n] | Droop input source / Droop input source | | | |
| VECTOR_G (n/M) | Can be changed: U, T | Calculated: - | Access level: 3 | |
| Data type: | Integer16 | Dynamic index: DDS, p0180 | Func. diagram: 6030 | |
| P-Group: | Closed-loop control | Units group: - | Unit selection: - | |
| Not for motor type: | REL | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | | |
| 0 | 3 | 0 | | |
| Description: | Sets the source for droop feedback. | | | |
| With increasing torque, the speed setpoint is reduced (enabled using p1492), so that for mechanically coupled drives a load equalization (load compensation) is obtained. A load difference compensation is also possible, if p1486 is connected with the torque setpoint of the other drive. | | | |
| Value: | 0: Droop feedback not connected | | | |
| | 1: Droop from torque setpoint | | | |
| | 2: Droop from speed controller output | | | |
| | 3: Droop from integral output, speed controller | | | |
| Dependency: | Refer to: p1486, p1487, p1489, r1490, p1492 | | | |
| Caution: | For active acceleration precontrol of the speed controller (refer to p1496), it is not recommended that p1488 is set to 1, as this could result in positive coupling effects. Instead of this, as source of the droop feedback, the output signal of the speed controller should be used, which generally sets the load torque. | | | |

| p1489[0...n] | Droop feedback scaling / Droop scaling | | | |
| VECTOR_G (n/M) | Can be changed: U, T | Calculated: - | Access level: 3 | |
| Data type: | FloatingPoint32 | Dynamic index: DDS, p0180 | Func. diagram: 6030 | |
| P-Group: | Closed-loop control | Units group: - | Unit selection: - | |
| Not for motor type: | REL | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | | |
| 0.000 | 0.500 | 0.050 | | |
| Description: | Sets the scaling for the droop feedback | | | |
| Dependency: | Refer to: p1486, p1487, p1488, p1490, p1492 | | | |
| Note: | Example: A value of 0.05 means that for a torque equal to the rated motor torque, the rated motor speed is reduced by 5 %. | | | |

| r1490 | CO: Droop feedback speed reduction / Droop n_reduction | | | |
| VECTOR_G (n/M) | Can be changed: - | Calculated: - | Access level: 3 | |
| Data type: | FloatingPoint32 | Dynamic index: - | Func. diagram: 6030 | |
| P-Group: | Closed-loop control | Units group: 3_1 | Unit selection: p0505 | |
| Not for motor type: | REL | Scaling: p2000 | Expert list: 1 | |
| Min | Max | Factory setting | | |
| - [rpm] | - [rpm] | - [rpm] | | |
| Description: | Displays the output signal of the droop calculation. The droop feedback result is subtracted from the speed setpoint when activated (p1492). | | | |
| Dependency: | Refer to: p1486, p1487, p1488, p1489, p1492 | | | |
### List of parameters

#### p1492[0...n] BI: Droop feedback enable / Droop enable

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 2520, 6030</td>
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<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Enables the droop to be applied to the speed/velocity setpoint.

**Dependency:** Refer to: p1486, p1487, p1488, p1489, r1490

**Note:** Even when not enabled, the droop speed is calculated but not subtracted from the setpoint speed. This makes it possible to subtract the result of this calculation from the speed of another drive.

#### r1493 CO: Moment of inertia, total / M_inertia total

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
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<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
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<td>Func. diagram: 6031</td>
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<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: 25_1</td>
<td>Unit selection: p0100</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>- [kgm²] - [kgm²]</td>
</tr>
</tbody>
</table>

**Description:** Displays the parameterized total moment of inertia ((p0341 * p0342) + p1496) without evaluation by the scaling via p1497.

#### p1495[0...n] CI: Acceleration pre-control / a_prectrl

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 6031</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the acceleration pre-control.

**Dependency:** The signal source for the acceleration is activated with p1400.2 = 1.

For p1400.2 = 0, the acceleration pre-control is calculated from the speed setpoint change from r0062.

For p1400.2 = 0 and activate reference model (p1400.3 = 1) the acceleration pre-control is switched out.

Refer to: p1400, p1496

**Note:** If the acceleration is entered as external signal, then the accelerating torque is calculated as follows (r1518):

\[ r1518 = \text{acceleration (\% of p2007)} / 100 \% \times (p2007 \times 60 \text{ s}) / (p3011 \times r0345 / 1 \text{ s} \times r0333) \]

#### p1496[0...n] Acceleration pre-control scaling / a_prectrl scal

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 1700, 6031</td>
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<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0.0 [%] 10000.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the scaling for the acceleration pre-control of the speed/velocity controller.

**Dependency:** When the reference model is activated (p1400.3 = 1) and for an internal acceleration pre-control (p1400.2 = 0), the acceleration pre-control is switched out (disabled). The reference model (p1400.3 = 1) and external acceleration pre-control (p1400.2 = 1) can be operated together.

Refer to: p0341, p0342
Warning:
The acceleration precontrol r1518 is kept at the old value if the ramp-function generator tracking (r1199.5) is active or the ramp-function generator output is set (r1199.3). This is used to avoid torque peaks. Depending on the application, it may therefore be necessary to disable the ramp-function generator tracking (p1145 = 0) or the acceleration precontrol (p1496 = 0).
The acceleration precontrol is set to zero, if the Vdc control is active (r0056.14/15).

Note:
The parameter is set to 100% by the rotating measurement (refer to p1960).

The acceleration pre-control may not be used if the speed setpoint manifests significant ripple (e.g. analog setpoint) and the rounding-off in the speed ramp-function generator is disabled.

We also recommend that the pre-control mode is not used if there is gearbox backlash.

---

**p1497[0...n]**  
CI: Moment of inertia, scaling / M_mom inert scal  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: Unsigned32 / FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min -  
Max -  
Calculated: -  
Dynamic index: CDS, p0170  
Access level: 3  
Units group: -  
Unit selection: -  
Expert list: 1  
Factory setting 1

**Description:**
Sets the signal source for scaling the moment of inertia.

**Dependency:**
Refer to: p0341, p0342

---

**p1499[0...n]**  
Accelerating for torque control, scaling / a for M_ctrl scal  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min 0.0 [%]  
Max 400.0 [%]  
Calculated: -  
Dynamic index: DDS, p0180  
Access level: 3  
Units group: -  
Unit selection: -  
Expert list: 1

**Description:**
Sets the scaling for the acceleration integrator at low speeds (only for encoderless torque control).

**Dependency:**
Refer to: p3900 = 1

---

**p1500[0...n]**  
Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set  
VECTOR_G  
Can be changed: C2(1), T  
Data type: Unsigned32  
P-Group: Commands  
Not for motor type: REL  
Min 0  
Max 999999  
Calculated: -  
Dynamic index: CDS, p0170  
Access level: 1  
Units group: -  
Unit selection: -  
Expert list: 1  
Factory setting 0

**Description:**
Runs the corresponding macro files.

The Connector Inputs (CI) for the torque setpoints of the appropriate Command Data Set (CDS) are appropriately interconnected.

The selected macro file must be available on the memory card/device memory.

Example:
p1500 = 6 --> the macro file PM000006.ACX is run.

**Dependency:**
Refer to: p0015, p0700, p1000, r8573

**Caution:**
When executing a specific macro, the corresponding programmed settings are made and become active.

**Notice:**
No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!

**Note:**
The macros in the specified directory are displayed in r8573. r8573 is not in the expert list of the commissioning software.

Macros available as standard are described in the technical documentation of the particular product.

CI: Connector Input
### List of parameters

**p1501[0...n]**

**BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>Sets the signal source for toggling between speed and torque control.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
<td>The input connectors to enter the torque are provided using p1511, p1512 and p1513.</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td>Refer to: p1300</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>REL</td>
<td>Caution: If the closed-loop torque control is not activated (p1300) and a change is made to closed-loop torque control (p1501), OFF1 (p0840) does not have its own braking response but pulse suppression when standstill is detected (p1226, p1227).</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td>Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
</tr>
</tbody>
</table>
| **Max**              | -                              | Note: 0 signal: Closed-loop speed control  
|                      | 1                              | 1 signal: Closed-loop torque control                                         |

**p1503[0...n]**

**CI: Torque setpoint / M_set**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
<td>Sets the signal source for the torque setpoint for torque control.</td>
</tr>
</tbody>
</table>
| **Data type:**       | Unsigned32 / FloatingPoint32   | Note: A change is made to closed-loop torque control if, in p1300, closed-loop torque control was selected or if the selection was made using the changeover source in p1501.  
|                      |                                | it is also possible to change over in operation using p1501.               |

**r1508**

**CO: Torque setpoint before supplementary torque / M_set bef. M_suppl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td>Displays the torque setpoint before entering the supplementary torque.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td>For closed-loop speed control, r1508 corresponds to the speed controller output; for closed-loop torque control, r1508 corresponds to the torque setpoint of the signal source assigned in p1503.</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>- [Nm]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>- [Nm]</td>
<td></td>
</tr>
</tbody>
</table>

**p1511[0...n]**

**CI: Supplementary torque 1 / M_suppl 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
<td>Sets the signal source for supplementary torque 1.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1512[0...n]</strong></td>
<td>CI: Supplementary torque 1 scaling / M_suppl 1 scal</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Dynamic index: CDS, p0170</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1513[0...n]</strong></td>
<td>CI: Supplementary torque 2 / M_suppl 2</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Dynamic index: CDS, p0170</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1514[0...n]</strong></td>
<td>Supplementary torque 2 scaling / M_suppl 2 scal</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r1515</strong></td>
<td>Supplementary torque total / M_suppl total</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: 7_1</td>
</tr>
<tr>
<td>Min</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r1516</strong></td>
<td>CO: Supplementary torque and acceleration torque / M_suppl + M_accel</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Units group: 7_1</td>
</tr>
<tr>
<td>Min</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the signal source for scaling the supplementary torque 1.

Sets the signal source for supplementary torque 2.

Sets the scaling for supplementary torque 2.

Displays the total supplementary torque. The displayed value is the total of supplementary torque values 1 and 2 (p1511, p1512, p1513, p1514).

Displays the total supplementary torque and the accelerating torque. The displayed value is the total of the smoothed supplementary torque and the accelerating torque (p1516 = p1516[1] + r1515).
### p1517[0...n]
**Accelerating torque smoothing time constant / M_accel T_smooth**

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Func. diagram:** 5042, 5210, 6060

- **P-Group:** Closed-loop control  
- **Units group:** -
- **Scaling:** -
- **Expert list:** 1

- **Min**  
  0.00 [ms]  
  Factory setting 4.00 [ms]

**Description:** Sets the smoothing time constant of the accelerating torque.

**Note:**
- For servo drives, the following applies:
  - For p1402.4 = 1, the highest dynamic performance is achieved with p1517 = 0 ms.
  - In encoderless operation, p1517 should be set >= 0.5 ms; for an induction motor with current displacement rotor p1517 >= 20 ms is recommended.
- For vector drives, the following applies:
  - The acceleration pre-control is inhibited if the smoothing is set to the maximum value.

### r1518[0...1]
**CO: Accelerating torque / M_accel**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 6060

- **P-Group:** Closed-loop control  
- **Units group:** 7_1  
- **Scaling:** p2003  
- **Expert list:** 1

- **Min**  
  - [Nm]  
  - Factory setting [Nm]
- **Max**  
  - [Nm]  
  - [Nm]

**Description:** Displays the accelerating torque for pre-control of the speed controller.

**Index:**
- [0] = Unsmoothed  
- [1] = Smoothed

**Dependency:** Refer to: p0341, p0342, p1496

### p1520[0...n]
**CO: Torque limit upper / M_max upper**

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_LIM_REF  
- **Access level:** 2

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Func. diagram:** 1700, 6630

- **P-Group:** Closed-loop control  
- **Units group:** 7_1  
- **Scaling:** p2003  
- **Expert list:** 1

- **Min**  
  -1000000.00 [Nm]  
  -20000000.00 [Nm]  
  Factory setting 0.00 [Nm]

**Description:** Sets the fixed, upper torque limit.

**Dependency:** Refer to: p1521, p1522, p1523, r1538, r1539

**Danger:** Negative values when setting the upper torque limit (p1520 < 0) can result in the motor accelerating in an uncontrollable fashion.

**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:**
- The torque limit is limited to 400% of the rated motor torque. When automatically calculating the motor/closed-loop control parameters (p0340), the torque limit is set to match the current limit (p0640).
Parameters

List of parameters

Table 1: List of Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Units Group</th>
<th>Unit Selection</th>
<th>Access Level</th>
<th>Dependency</th>
<th>Danger</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1521[0...n]</td>
<td>CO: Torque limit lower / M_max lower</td>
<td>VECTOR_G (n/M)</td>
<td>Closed-loop control</td>
<td>7_1</td>
<td>p0505</td>
<td>2</td>
<td>p1520, p1522, p1523</td>
<td>Sets the fixed, lower torque limit.</td>
<td>Positive values when setting the lower torque limit (p1521 &gt; 0) can result in the motor accelerating in an uncontrollable fashion.</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
</tr>
<tr>
<td>p1522[0...n]</td>
<td>CI: Torque limit upper / M_max upper</td>
<td>VECTOR_G (n/M)</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>p1520, p1521, p1523</td>
<td>Sets the signal source for the upper torque limit.</td>
<td>Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.</td>
<td></td>
</tr>
<tr>
<td>p1523[0...n]</td>
<td>CI: Torque limit lower / M_max lower</td>
<td>VECTOR_G (n/M)</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>p1520, p1521, p1522</td>
<td>Sets the signal source for the lower torque limit.</td>
<td>Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.</td>
<td></td>
</tr>
<tr>
<td>p1524[0...n]</td>
<td>CO: Torque limit upper scaling / M_max upper scal</td>
<td>VECTOR_G (n/M)</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>p1520, p1521, p1522</td>
<td>Sets the scaling for the upper torque limit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### p1525[0...n]

**CO:** Torque limit lower scaling / M_max lower scal  
**VECTOR_G (n/M)**  
*Can be changed: U, T*  
*Calculated: -*  
*Access level: 3*  
*Data type: FloatingPoint32*  
*Dynamic index: DDS, p0180*  
*Func. diagram: 6630*  
*P-Group: Closed-loop control*  
*Units group: -*  
*Unit selection: -*  
*Not for motor type: REL*  
*Scaling: PERCENT*  
*Expert list: 1*  
*Min*  
*Max*  
*2000.0 [%]*  
*100.0 [%]*  
**Description:**  
Sets the scaling for the lower torque limit.  
**Notice:** A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.  
**Note:** This parameter can be freely interconnected. The value has the meaning stated above if it is interconnected from connector input p1528.

### r1526

**CO:** Torque limit upper without offset / M_max up w/o offs  
**VECTOR_G (n/M)**  
*Can be changed: -*  
*Calculated: -*  
*Access level: 3*  
*Data type: FloatingPoint32*  
*Dynamic index: -*  
*Func. diagram: 6060, 6630, 6640*  
*P-Group: Closed-loop control*  
*Units group: 7_1*  
*Unit selection: p0505*  
*Not for motor type: REL*  
*Scaling: p2003*  
*Expert list: 1*  
*Min*  
*Max*  
*[-Nm]*  
*[-Nm]*  
**Description:** Displays the upper torque limit of all torque limits without offset.  
**Dependency:** Refer to: p1520, p1521, p1522, p1523, p1528, p1529

### r1527

**CO:** Torque limit lower without offset / M_max low w/o offs  
**VECTOR_G (n/M)**  
*Can be changed: -*  
*Calculated: -*  
*Access level: 3*  
*Data type: FloatingPoint32*  
*Dynamic index: -*  
*Func. diagram: 6060, 6630, 6640*  
*P-Group: Closed-loop control*  
*Units group: 7_1*  
*Unit selection: p0505*  
*Not for motor type: REL*  
*Scaling: p2003*  
*Expert list: 1*  
*Min*  
*Max*  
*[-Nm]*  
*[-Nm]*  
**Description:** Displays the lower torque limit of all torque limits without offset.  
**Dependency:** Refer to: p1520, p1521, p1522, p1523, p1528, p1529

### p1528[0...n]

**CI:** Torque limit upper scaling / M_max upper scal  
**VECTOR_G (n/M)**  
*Can be changed: T*  
*Calculated: -*  
*Access level: 3*  
*Data type: Unsigned32 / FloatingPoint32*  
*Dynamic index: CDS, p0170*  
*Func. diagram: 6630*  
*P-Group: Closed-loop control*  
*Units group: -*  
*Unit selection: -*  
*Not for motor type: REL*  
*Scaling: PERCENT*  
*Expert list: 1*  
*Min*  
*Max*  
*1524[0]*  
**Description:** Sets the signal source for the scaling of the upper torque limit in p1522.  
**Danger:** For p1400.4 = 0 (torque limiting, upper/lower) the following applies:  
Negative values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.  
**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### p1529[0...n]
**CI: Torque limit lower scaling / M_max lower scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Function diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1529[0...n]</td>
<td>Sets the signal source for the scaling of the lower torque limit in p1523.</td>
<td>Unsigned32 / FloatPoint32</td>
<td>3</td>
<td>6630</td>
</tr>
<tr>
<td>Danger</td>
<td>Positive values resulting from the signal source and scaling can cause the motor to accelerate in an uncontrolled manner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice</td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p1530[0...n]
**Power limit motoring / P_max mot**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Function diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1530[0...n]</td>
<td>Sets the power limit when motoring.</td>
<td>FloatPoint32</td>
<td>2</td>
<td>6640</td>
</tr>
</tbody>
</table>

### p1531[0...n]
**Power limit regenerative / P_max gen**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Function diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1531[0...n]</td>
<td>Sets the regenerative power limit.</td>
<td>FloatPoint32</td>
<td>2</td>
<td>6640</td>
</tr>
</tbody>
</table>

### r1533
**Current limit torque-generating total / Iq_max total**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Function diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1533</td>
<td>Displays the maximum torque/force generating current as a result if all current limits.</td>
<td>FloatPoint32</td>
<td>3</td>
<td>6640</td>
</tr>
</tbody>
</table>
**r1536[0...1]**

**Current limit maximum torque-generating current / Isq_max**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6640, 6710
- **P-Group:** Closed-loop control
- **Units group:** 6_2
- **Unit selection:** p0505
- **Not for motor type:** REL
- **Scaling:** p2002
- **Expert list:** 1
- **Min**
  - [Arms]
  - [Arms]
- **Max**
  - [Arms]
  - [Arms]

**Description:** Displays the maximum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.

**Index:**
- [0] = Limited
- [1] = Unlimited

**r1537[0...1]**

**Current limit minimum torque-generating current / Isq_min**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6640, 6710
- **P-Group:** Closed-loop control
- **Units group:** 6_2
- **Unit selection:** p0505
- **Not for motor type:** REL
- **Scaling:** p2002
- **Expert list:** 1
- **Min**
  - [Arms]
  - [Arms]
- **Max**
  - [Arms]
  - [Arms]

**Description:** Displays the minimum limit for the torque-generating current component. Index 0 indicates the signal limited by the Vdc controller.

**Index:**
- [0] = Limited
- [1] = Unlimited

**r1538**

**CO: Upper effective torque limit / M_max upper eff**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 1610, 1700, 5610, 5650, 6060, 6640
- **P-Group:** Closed-loop control
- **Units group:** 7_1
- **Unit selection:** p0505
- **Not for motor type:** REL
- **Scaling:** p2003
- **Expert list:** 1
- **Min**
  - [Nm]
  - [Nm]
- **Max**
  - [Nm]
  - [Nm]

**Description:** Displays the currently effective upper torque limit.

**Note:**
- The effective upper torque limit is reduced with respect to the selected upper torque limit p1520, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.
- The following applies in the case of VECTOR: This may be the case for rotating measurements (see p1960).
- The following applies in the case of VECTOR: Further variable torque limiting is possible (e.g. binector input p1540).
- The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

**r1539**

**CO: Lower effective torque limit / M_max lower eff**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 1610, 1700, 5610, 5650, 6060, 6640
- **P-Group:** Closed-loop control
- **Units group:** 7_1
- **Unit selection:** p0505
- **Not for motor type:** REL
- **Scaling:** p2003
- **Expert list:** 1
- **Min**
  - [Nm]
  - [Nm]
- **Max**
  - [Nm]
  - [Nm]

**Description:** Displays the currently effective lower torque limit.

**Note:**
- The effective lower torque limit is reduced with respect to the selected lower torque limit p1521, if the current limit p0640 is reduced or the rated magnetizing current of the induction motor p0320 is increased.
- The following applies in the case of VECTOR: This may be the case for rotating measurements (see p1960).
The following applies in the case of VECTOR: Further variable torque limiting is possible (e.g. binector input p1541).
The torque limit p1520 can be re-calculated using p0340 = 1, 3 or 5.

### p1540[0...n]
**CI: Torque limit speed controller upper scaling / M_max n-ctr upScal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1540[0...n]</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>3</td>
<td>CDS, p0170</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output.

### p1541[0...n]
**CI: Torque limit. speed controller lower scaling / M_max nctr lowScal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1541[0...n]</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>3</td>
<td>CDS, p0170</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output.

### p1545[0...1]
**BI: Activates travel to a fixed stop / TfS activation**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1545[0...1]</td>
<td>Unsigned32 / Binary</td>
<td>3</td>
<td>CDS, p0170</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source to activate/de-activate the "travel to fixed stop" function
1: Travel to fixed stop is active
0: Travel to fixed stop is inactive

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
EPOS uses the parameter (refer to p2686).
When traveling to fixed stop, the fault F07900 "motor blocked" is suppressed.

### r1547[0...1]
**CO: Torque limit for speed controller output / M_max outp n_ctrl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1547[0...1]</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>-</td>
<td>7_1</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Displays the torque limit to limit the speed controller output.

**Index:**
- [0] = Upper limit
- [1] = Lower limit
### r1548[0...1]

**CO: Stall current limit torque-generating maximum / Isq_max stall**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1548[0...1]</td>
<td>Displays the limit for the torque-generating current component using the stall calculation, the current limit of the Motor Module as well as the parameterization in p0640.</td>
<td></td>
<td>- [Arms] - [Arms] - [Arms]</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Upper limit
- [1] = Lower limit

#### Data type:
FloatingPoint32

#### Dynamic index:
- [Arms]

#### Units group:
6_2

#### Unit selection:
p0505

#### Access level:
4

#### Description:
Sets the signal source to change over the torque limits between variable and fixed torque limit.

1 signal from BI: p1551:
The variable torque limit applies (fixed torque limit + scaling).

0 signal from BI: p1551:
The fixed torque limit applies.

#### Example:
In order that for a Quick Stop (OFF3) the fixed torque limit is effective, BI: p1551 must be interconnected to r0899.5.

---

### p1551[0...n]

**BI: Torque limit variable/fixed signal source / M_lim var/fixS_src**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1551[0...n]</td>
<td>Sets the signal source to change over the torque limits between variable and fixed torque limit. 1 signal from BI: p1551: The variable torque limit applies (fixed torque limit + scaling). 0 signal from BI: p1551: The fixed torque limit applies. Example: In order that for a Quick Stop (OFF3) the fixed torque limit is effective, BI: p1551 must be interconnected to r0899.5.</td>
<td></td>
<td>- - 1</td>
</tr>
</tbody>
</table>

**Index:**
- [0...n] = Upper limit

#### Data type:
Unsigned32 / Binary

#### Dynamic index:
CDS, p0170

#### Units group:
- [Arms]

#### Unit selection:
- [Arms]

#### Access level:
3

#### Description:
Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.

#### Access level:
3

#### Description:
Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.

---

### p1554[0...n]

**CI: Torque limit lower scaling without offset / M_max low w/o offs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1554[0...n]</td>
<td>Sets the signal source for the scaling of the lower torque limiting to limit the speed controller output without taking into account the current and power limits.</td>
<td></td>
<td>- - 1</td>
</tr>
</tbody>
</table>

**Index:**
- [0...n] = Lower limit

#### Data type:
Unsigned32 / FloatingPoint32

#### Dynamic index:
CDS, p0170

#### Units group:
- [Arms]

#### Unit selection:
- [Arms]

#### Expert list:
1

#### Access level:
3

#### Description:
Sets the signal source for the scaling of the upper torque limiting to limit the speed controller output without taking into account the current and power limits.
### p1555[0...n] CI: Power limit / P_max

**VECTOR_G (n/M)**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3

- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** CDS, p0170
- **Func. diagram:** 6640

- **P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1

- **Not for motor type:** REL
- **Scaling:** r2004
- **Min**
- **Max**

**Description:** Sets the signal source for the motoring and negative regenerative power limit.

**Dependency:** Refer to: p1530, p1531

**Note:**
- The resulting motoring power limit is the minimum from p1530 and the signal which is read in.
- The resulting regenerative power limit is the maximum from p1531 and the negative signal which is read in.

### p1556[0...n] Power limit scaling / P_max scal

**VECTOR_G (n/M)**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2

- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6640

- **P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1

- **Not for motor type:** REL
- **Scaling:** -
- **Min**
- **Max**

**Description:** Sets the scaling of the signal source for the motoring and negative regenerative power limit.

0 signifies no power limiting.

### p1569[0...n] CI: Supplementary torque 3 / M_suppl 3

**VECTOR_G (n/M)**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2

- **Data type:** Unsigned32 / FloatingPoint32
- **Dynamic index:** DDS, p0170
- **Func. diagram:** 7010

- **P-Group:** Functions
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1

- **Not for motor type:** REL
- **Scaling:** p2003
- **Min**
- **Max**

**Description:** Sets the signal source for supplementary torque 3.

**Dependency:** Refer to: p3842

**Notice:**
- The signal input is after the torque limit (r1538, r1539). For vector drives, the signals that are entered are only limited by the current and power limits.

**Note:**
- The signal input is preferably used to enter the friction characteristic. The friction compensation is also effective if the speed controller output reaches its torque limits, but the current limits have still not been reached (this only applies to vector drives).

### p1570[0...n] CO: Flux setpoint / Flux setpoint

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 2

- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6722

- **P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1

- **Not for motor type:** PEM, REL
- **Scaling:** PERCENT
- **Min**
- **Max**

**Description:** Sets the flux setpoint referred to rated motor flux.

**Notice:**
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**Note:**
- For p1570 > 100%, the flux setpoint increases as a function of the load from 100% (no-load operation) to the setting in p1570 (above rated motor torque), if p1580 > 0% has been set.
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1571[0...n]</strong></td>
<td>CI: Supplementary flux setpoint / Suppl flux setp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 6725</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min -</td>
<td>Max -</td>
<td>Factory setting 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1572[0...n]</strong></td>
<td>Supplementary flux setpoint / Suppl flux setp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6726</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min 0.0 [%]</td>
<td>Max 100.0 [%]</td>
<td>Factory setting 0.0 [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1573[0...n]</strong></td>
<td>Flux threshold value magnetizing / Flux thresh magnet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6722</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min 10.0 [%]</td>
<td>Max 200.0 [%]</td>
<td>Factory setting 100.0 [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p1574[0...n]</strong></td>
<td>Voltage reserve dynamic / U_reserve dyn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: CALC_MOD_LIM_REF</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6723, 6724</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 5_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min 0.0 [Vrms]</td>
<td>Max 150.0 [Vrms]</td>
<td>Factory setting 10.0 [Vrms]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
- Sets the signal source for the supplementary flux setpoint.
- Low flux setpoints can cause the drive to stall at higher loads. This is the reason that the flux setpoint should only be adapted for slow load changes.
- The supplementary flux setpoint is limited to +/- 50 %.

**Notice:**
- Sets the supplementary flux setpoint for the flux controller.
- The value is referred to the rated motor flux.
- The parameter should be set back to 0% again for normal closed-loop control operation.
- The parameter is used to optimize the flux controller. The current model is not influenced by the setting.

**Note:**
- The parameter only has an influence if the flux actual value reaches the threshold value p1573 more quickly during magnetizing than the time set in p0346.
- The parameter has no influence for flying restart (see p1200) and after DC braking (see p1231).

**Description:**
- Sets the voltage reserve dynamic.
- In the field weakening range, it must be expected that the control dynamic performance is somewhat restricted due to the limited possibilities of controlling/adjusting the voltage. This can be improved by increasing the voltage reserve. Increasing the reserve reduces the steady-state maximum output voltage (r0071).
**Parameters**

**List of parameters**

**p1576[0...n]**  
**Flux boost, adaptation speed, lower / Flux boost n lower**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: ASM, PEM, REL  
Min  
0.00 [rpm]  
Max  
210000.00 [rpm]  
Access level: 3  
Expert list: 1  
Factory setting  
0.00 [rpm]  

Description:  
Sets the lower adaptation speed of the flux boost.  
Below this speed, p1570 is set as reference (setpoint) flux.

**p1577[0...n]**  
**Flux boost adaptation speed, upper / Flux boost n upper**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: ASM, PEM, REL  
Min  
1.0 [%]  
Max  
10000.0 [%]  
Access level: 3  
Expert list: 1  
Factory setting  
200.0 [%]  

Description:  
Sets the upper adaptation speed of the flux boost.  
Above this speed, the rated motor flux (100 %) is set as reference (setpoint) flux.

Dependency:  
The parameter value refers to the lower adaptation speed of the flux boost.  
Refer to: p1576

**p1580[0...n]**  
**Efficiency optimization / Efficiency opt.**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: PEM, REL, FEM  
Min  
0 [%]  
Max  
100 [%]  
Access level: 2  
Expert list: 1  
Factory setting  
0 [%]  

Description:  
Sets the efficiency optimization.  
When optimizing the efficiency, the flux setpoint of the closed-loop control is adapted as a function of the load.  
For p1580 = 100 %, under no-load operating conditions, the flux setpoint is reduced to 50 % of the rated motor flux.  
It only makes sense to activate this function if the dynamic response requirements of the speed controller are low.  
In order to avoid oscillations, if required, the speed controller parameters should be adapted (increase Tn, reduce Kp).

Note:  
Further, the smoothing time of the flux setpoint filter (p1582) should be increased.

**p1582[0...n]**  
**Flux setpoint smoothing time / Flux setp T_smth**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min  
4 [ms]  
Max  
5000 [ms]  
Access level: 3  
Expert list: 1  
Factory setting  
15 [ms]  

Description:  
Sets the smoothing time for the flux setpoint.
r1583  |  Flux setpoint smoothed / Flux setp smooth  
VECTOR_G (n/M)  
Can be changed:  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min  
Max  
Description:  
The value is referred to the rated motor flux.

p1584[0...n]  |  Field weakening operation, flux setpoint smoothing time / Field weak T_smth  
VECTOR_G (n/M)  
Can be changed:  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: PEM, REL  
Min  
Max  
Factory setting  
Description:  
The smoothing should be especially used if there is no regenerative feedback into the line supply. This means that the DC link voltage can quickly increase in regenerative operation.

p1585[0...n]  |  Flux actual value, smoothing time / Flux actVal T_smth  
VECTOR_G (n/M)  
Can be changed:  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: ASM, PEM, REL  
Min  
Max  
Factory setting  
Description:  
Only the flux setpoint rise is smoothed.

p1586[0...n]  |  Field weakening characteristic, scaling / Field weak scal  
VECTOR_G (n/M)  
Can be changed:  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL, FEM  
Min  
Max  
Factory setting  
Description:  
Sets the scaling of the pre-control characteristic for the start of field weakening.

Note:  
If the start of field weakening is shifted to lower speeds, then the voltage reserve is increased for partial load situations.

If the start of field weakening is shifted to higher speeds, the voltage reserve is appropriately reduced so that for fast load changes, it can be expected that this will have a negative impact on the dynamic performance.
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r1589</strong></td>
<td>Field-weakening current, pre-control value / I_FieldWeak prectr</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6724</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 6_2 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: ASM, REL, FEM</td>
<td>Scaling: p2002 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
<tr>
<td><strong>p1590[0...n]</strong></td>
<td>Flux controller P gain / Flux controller Kp</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: CALC_MOD_CON Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6723</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: PEM, REL</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0.0</td>
<td>999999.0 10.0</td>
</tr>
<tr>
<td><strong>p1592[0...n]</strong></td>
<td>Flux controller integral time / Flux controller Tn</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: CALC_MOD_CON Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6723</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: PEM, REL</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>10000 [ms] 30 [ms]</td>
</tr>
<tr>
<td><strong>r1593[0...1]</strong></td>
<td>CO: Field weakening controller / flux controller output / Field/Fl_ctrl outp</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6723, 6724, 6726</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 6_2 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: p2002 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
<tr>
<td><strong>p1594[0...n]</strong></td>
<td>Field-weakening controller, P gain / Field_ctrl Kp</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6724</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: ASM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0.00</td>
<td>1000.00 0.00</td>
</tr>
</tbody>
</table>

**Description:**
- Displays the pre-control value for the field weakening current.
- Sets the proportional gain for the flux controller.
- The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned. When calculating controller parameters (p0340 = 4), this value is re-calculated.
- Sets the integral time for the flux controller.
- The value is automatically pre-assigned dependent on the motor when the drive system is first commissioned. When calculating controller parameters (p0340 = 4), this value is re-calculated.
- Displays the output of the field weakening controller (synchronous motor) or the output of the flux controller (separately-excited synchronous motor, induction motor).
- Sets the P gain of the field-weakening controller.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>P-Group</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1596[0...n]</td>
<td>Field weakening controller integral-action time / Field_ctrl Tn</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>3</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>50 [ms]</td>
</tr>
<tr>
<td>r1597</td>
<td>CO: Field weakening controller output / Field_ctrl outp</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>4</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [%]</td>
</tr>
<tr>
<td>r1598</td>
<td>CO: Total flux setpoint / Flux setp total</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>3</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [%]</td>
</tr>
<tr>
<td>p1599[0...n]</td>
<td>Flux controller, excitation current difference / Flux ctrl I_exc_dif</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>3</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3.0 [%]</td>
</tr>
</tbody>
</table>

### Description:
- Sets the integral-action time of the field-weakening controller.
- Displays the output of the field weakening controller. The value is referred to the rated motor flux.
- Displays the effective flux setpoint. The value is referred to the rated motor flux.
- Sets the permissible difference between the actual excitation current and the excitation current setpoint. The excitation current flux controller is active within this difference.

### Notes:
- If the difference lies outside the specified limit value, then the I component of the excitation current flux controller is kept. Instead of this, for the flux controller of the field-generating current, an additional I controller is switched in (integral time according to p1592).
- If the difference again lies within the bandwidth, the I component of the excitation current flux controller is re-activated and the I component of the flux controller of the field-generating current is reduced as an exponential function with respect to time. The reduction of the I component over time depends on the rotor time constant (r0384).
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>p1600[0...n]</th>
<th>P flux controller, P gain / P flux ctrl Kp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed</strong>: U, T&lt;br&gt;<strong>Data type</strong>: FloatingPoint32&lt;br&gt;<strong>P-Group</strong>: Closed-loop control&lt;br&gt;<strong>Not for motor type</strong>: ASM, PEM, REL&lt;br&gt;<strong>Min</strong>&lt;br&gt;0.0&lt;br&gt;<strong>Max</strong>&lt;br&gt;999999.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r1602</th>
<th>CO: P flux controller output / P flux ctrl outp</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed</strong>: -&lt;br&gt;<strong>Data type</strong>: FloatingPoint32&lt;br&gt;<strong>P-Group</strong>: Closed-loop control&lt;br&gt;<strong>Not for motor type</strong>: ASM, PEM, REL&lt;br&gt;<strong>Min</strong>&lt;br&gt;- [Arms]&lt;br&gt;<strong>Max</strong>&lt;br&gt;- [Arms]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p1604[0...n]</th>
<th>Pulse technique current limit / Pulse current lim</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed</strong>: U, T&lt;br&gt;<strong>Data type</strong>: FloatingPoint32&lt;br&gt;<strong>P-Group</strong>: Closed-loop control&lt;br&gt;<strong>Not for motor type</strong>: ASM, REL, FEM&lt;br&gt;<strong>Min</strong>&lt;br&gt;0.00 [Arms]&lt;br&gt;<strong>Max</strong>&lt;br&gt;10000.00 [Arms]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p1605[0...n]</th>
<th>Pulse technique pattern configuration / Puls pattn config</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed</strong>: U, T&lt;br&gt;<strong>Data type</strong>: Integer16&lt;br&gt;<strong>P-Group</strong>: Closed-loop control&lt;br&gt;<strong>Not for motor type</strong>: ASM, REL, FEM&lt;br&gt;<strong>Min</strong>&lt;br&gt;1&lt;br&gt;<strong>Max</strong>&lt;br&gt;2</td>
</tr>
</tbody>
</table>
### r1606
**CO: Pulse technique pattern actual / Puls pattern act**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Integer16
- **Dynamic index:** -
- **Func. diagram:** -

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** ASM, REL, FEM
- **Scaling:** -
- **Expert list:** 1

**Min**
- 0

**Max**
- 2

**Dependency:** Refer to: p1605, p1750

**Description:** Displays the currently applied pulse patterns for estimating the continuous rotor position.

**Value:**
- 0: None
- 1: pm
- 2: ppm

### p1607[0...n]
**Pulse technique stimulus / Puls stimulus**

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_CON
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** -

**P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -

**Not for motor type:** ASM, REL, FEM
- **Scaling:** -
- **Expert list:** 1

**Min**
- 0.000 [mVs]

**Max**
- 20000.000 [mVs]
- 32.000 [mVs]

**Dependency:** Refer to: p1605, p1750

**Description:** Sets the excitation amplitude (voltage-time pulse) for the pulse technique for estimating the continuous rotor position.

### r1608[0...6]
**CO: Pulse technique response / Puls response**

**VECTOR_G (n/M)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -

**P-Group:** Displays, signals
- **Units group:** 6_5
- **Unit selection:** p0505

**Not for motor type:** ASM, REL, FEM
- **Scaling:** p2002
- **Expert list:** 1

**Min**
- - [A]

**Max**
- - [A]

**Dependency:** Refer to: p1605, p1607, p1750

**Description:** Displays the signal responses to the excitation of the pulse technique.

**Index:**
- [0] = Phase R
- [1] = Phase S
- [2] = D estimated
- [3] = Q estimated
- [4] = D estimated AC
- [5] = Q estimated AC
- [6] = Pointer length AC

### p1609[0...n]
**I/f operation current setpoint / I/f op I_setp**

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_ALL
- **Access level:** 3

**Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 6727

**P-Group:** Closed-loop control
- **Units group:** 6_2
- **Unit selection:** p0505

**Not for motor type:** ASM, PEM, REL
- **Scaling:** -
- **Expert list:** 1

**Min**
- 0.00 [Arms]

**Max**
- 10000.00 [Arms]
- 0.00 [Arms]

**Dependency:**

**Description:** Sets the stator current setpoint for operation of a separately-excited synchronous motor (FEM) in operating mode I/f (p1300 = 18).
### p1610[0...n] Torque setpoint static (SLVC) / M_set static

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 1710, 6721, 6722, 6726
- **P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** -200.0 [%]
- **Max:** 200.0 [%]
- **Factory setting:** 50.0 [%]

**Description:**
Sets the static torque setpoint for sensorless vector control (SLVC).

This parameter is entered as a percentage referred to the rated motor torque (r0333). For sensorless vector control, when the motor model is shut down, an absolute current is impressed. p1610 represents the maximum load that occurs at a constant setpoint speed.

**Notice:**
p1610 should always be set to at least 10 % higher than the maximum steady-state load that can occur.

**Note:**
- For p1610 = 0%, a current setpoint is calculated that corresponds to the no-load case (ASM: rated magnetizing current).
- For p1610 = 100 %, a current setpoint is calculated that corresponds to the rated motor torque.
- Negative values are converted into positive setpoints in the case of induction and permanent-magnet synchronous motors.

### p1611[0...n] Supplementary accelerating torque (SLVC) / M_suppl_accel

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_ALL
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 1710, 6721, 6722, 6726
- **P-Group:** Closed-loop control
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.0 [%]
- **Max:** 200.0 [%]
- **Factory setting:** 30.0 [%]

**Description:**
Enters the dynamic torque setpoint for the low-speed range for sensorless vector control (SLVC). This parameter is entered as a percentage referred to the rated motor torque (r0333).

**Note:**
- When accelerating and braking p1611 is added to p1610 and the resulting total torque is converted into an appropriate current setpoint and controlled.
- For pure accelerating torques, it is always favorable to use the torque pre-control of the speed controller (p1496).

### p1612[0...n] Current setpoint magnetizing open-loop controlled / ld_set ctrl

**VECTOR_G (n/M)**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_ALL
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** -
- **P-Group:** Closed-loop control
- **Units group:** 6_2
- **Unit selection:** p0505
- **Not for motor type:** ASM, PEM, REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.00 [Arms]
- **Max:** 10000.00 [Arms]
- **Factory setting:** 0.00 [Arms]

**Description:**
Sets the magnetizing current setpoint in the open-loop controlled encoderless operation.

The value is only valid during the current model orientation.

**Dependency:**
Refer to: p1610, p1611

**Note:**
The value is effective at speeds less than p1755 and represents a reserve for a possibly existing load torque or torque error in the moment of inertia.
### r1614 EMF maximum / EMF max

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Displays, signals</td>
<td>Units group</td>
<td>5_1</td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>ASM, PEM, REL</td>
<td>Scaling</td>
<td>p2001</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

- **[Vrms]**
- **[Vrms]**
- **[Vrms]**

**Description:** Displays the actual maximum possible electromotive force (EMF) of the separately-excited synchronous motor.

**Dependency:**
- Actual DC link voltage (r0070).
- Maximum modulation depth (p1803).
- Field-generating and torque-generating current setpoint.

### p1616[0...n] Current setpoint smoothing time / I_set T_smooth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Calculated:</td>
<td>CALC_MOD_REG</td>
<td>6721, 6722, 6726</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dynamic index</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td>Scaling</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>4 [ms]</td>
<td>10000 [ms]</td>
<td>40 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the smoothing time for the current/torque setpoint in the open-loop-controlled operating range in the case of sensorless vector control.

**Note:**
- This parameter is only effective in the range where current is injected for sensorless vector control.
- For induction motors, the current setpoint is calculated from p1610 and p1611 and for separately excited synchronous motors the torque setpoint is calculated from p1610 and p1611.

### r1617 CO: Torque setpoint (controlled) / M_setp sv SLVC

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>ASM, PEM, REL</td>
<td>Scaling</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>- [Nm]</td>
<td>- [Nm]</td>
<td>- [Nm]</td>
</tr>
</tbody>
</table>

**Description:** Torque setpoint for sensorless control of the separately excited synchronous motor in the open-loop-controlled operating range (under p1755 * p1756).

### r1618 Current model controller, pre-control / I_mod_ctrl prectrl

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td>Units group</td>
<td>6_2</td>
<td>p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>ASM, PEM, REL</td>
<td>Scaling</td>
<td>p2002</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

**Description:** Displays the pre-control value of the current model controller.
- It involves a magnetizing current in the d-direction.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1619[0...n]</td>
<td>Setpoint/actual value tracking threshold / SetAct track thrsh</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: CALC_MOD_ALL</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Func. diagram: 6727</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>10000.00 [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [Arms]</td>
</tr>
<tr>
<td></td>
<td>Threshold for setpoint/actual value tracking of the stator current in the q axis of the current model.</td>
</tr>
</tbody>
</table>

| p1620[0...n] | Stator current, minimum / I_stator min |
| VECTOR_G (n/M) | Can be changed: U, T |
| Data type: FloatingPoint32 | Calculated: CALC_MOD_ALL |
| P-Group: Closed-loop control | Access level: 3 |
| Not for motor type: ASM, PEM, REL | Func. diagram: 6727 |
| Min | -10000.00 [Arms] |
| Max | 10000.00 [Arms] |
| Factory setting | 0.00 [Arms] |
| | Sets the minimum stator current for separately-excited synchronous motors (FEM). A negative value means that the field-generating stator current (d-axis) has a negative sign. The valid value is internally limited to 50% of the rated motor current (p0305). |

| p1621[0...n] | Changeover speed, inner cos phi = 1 / n_chngov cos phi=1 |
| VECTOR_G (n/M) | Can be changed: U, T |
| Data type: FloatingPoint32 | Calculated: CALC_MOD_ALL |
| P-Group: Closed-loop control | Access level: 3 |
| Not for motor type: ASM, PEM, REL | Func. diagram: 6727 |
| Min | 0.00 [rpm] |
| Max | 210000.00 [rpm] |
| Factory setting | 0.00 [rpm] |
| | Sets the speed where a change is made from the inner to the outer cos phi = 1. |
| | If the value that is entered exceeds the rated speed, then a change is made to the inner cos phi = 1 over the complete speed range. |

| p1622[0...n] | Field-generating current setpoint smoothing time constant / Id_setp T_smth |
| VECTOR_G (n/M) | Can be changed: U, T |
| Data type: FloatingPoint32 | Calculated: - |
| P-Group: Closed-loop control | Access level: 3 |
| Not for motor type: ASM, PEM, REL | Func. diagram: 6727 |
| Min | 0.1 [ms] |
| Max | 200.0 [ms] |
| Factory setting | 20.0 [ms] |
| | Sets the smoothing time constant for the setpoint of the field-generating current components. |
| | The current filtered in this way is included in the calculation of the cos phi. |

| r1623[0...1] | Field-generating current setpoint (steady-state) / Id_set stationary |
| VECTOR_G (n/M) | Can be changed: - |
| Data type: FloatingPoint32 | Calculated: - |
| P-Group: Displays, signals | Access level: 4 |
| Not for motor type: PEM, REL | Func. diagram: 6723, 6726, 6727 |
| Min | - [Arms] |
| Max | - [Arms] |
| Factory setting | - [Arms] |
| | Displays the steady-state field generating current setpoint (Id_set). |
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note:</strong></td>
<td>Displays the stationary field-generating current on the stator side in the case of separately excited synchronous motors without the excitation current monitoring component (r1644).</td>
</tr>
<tr>
<td><strong>Re index 1:</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r1624</th>
<th>Field-generating current setpoint, total / I_d_setp total</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6640, 6721, 6723, 6727</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Units group: 6_2 Unit selection: p0505</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: p2002 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

**Description:** Displays the limited field-generating current setpoint (I_d_set). This value comprises the steady-state field-generating current setpoint r1623 and a dynamic component that is only set when changes are made to the flux setpoint.

<table>
<thead>
<tr>
<th>p1625[0...n]</th>
<th>Excitation current setpoint calibration / I_exc_setp cal</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6727</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: PERCENT Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>10.0 [%]</td>
<td>200.0 [%] 100.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Gain factor to weight the excitation current setpoint.

<table>
<thead>
<tr>
<th>r1626</th>
<th>CO: Excitation current setpoint / I_exc_setp</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6727</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: p2005 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%] - [%]</td>
</tr>
</tbody>
</table>

**Description:** Displays the calculated excitation current setpoint.

| Dependency: | Refer to: p0390 |

<table>
<thead>
<tr>
<th>r1627</th>
<th>CO: Current model load angle / I_mod load angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: 6727</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: p2005 Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>- [']</td>
<td>- ['] - [']</td>
</tr>
</tbody>
</table>

**Description:** Displays the load angle of the current model.

<table>
<thead>
<tr>
<th>p1628[0...n]</th>
<th>Current model controller, dynamic factor / I_mod_ctr dyn_fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: CALC_MOD_CON Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6727</td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>1 [%]</td>
<td>400 [%] 50 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the dynamic response factor for the current model controller.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1629[0...n]</td>
<td>Current model controller P gain / $I_{mod_ctrl}K_p$</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.000 - 10000.00</td>
</tr>
<tr>
<td>r1630[0...n]</td>
<td>Current model controller integral time / $I_{mod_ctrl}T_n$</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.00 [ms] - 10000.00 [ms]</td>
</tr>
<tr>
<td>r1631</td>
<td>Current model controller, P gain effective / $I_{mod_ctrl}K_p$ eff</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- - -</td>
</tr>
<tr>
<td>r1632</td>
<td>Current model controller integral time effective / $I_{mod_ctrl}T_n$ eff</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [ms] - [ms]</td>
</tr>
<tr>
<td>r1633</td>
<td>Current model, flux setpoint / $I_{mod_flux_setp}$</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>-</td>
<td>PERCENT</td>
<td>1</td>
<td>- [%] - [%]</td>
</tr>
</tbody>
</table>

**Description:**

- **p1629[0...n]**
  - Sets the proportional gain for the current model controller.
  - This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

- **r1630[0...n]**
  - Sets the integral time for the current model controller.
  - This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

- **r1631**
  - Displays the effective P gain of the current model controller.

- **r1632**
  - Displays the effective integral time of the current model controller.

- **r1633**
  - Displays the effective flux setpoint of the current model.
  - The value is referred to the rated motor flux.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1634</td>
<td><strong>Current model, flux actual value / _mod_flux_act_val</strong></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
</tr>
<tr>
<td>Max</td>
<td>- [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
</tr>
<tr>
<td>Description: Displays the effective flux actual value of the current model. The value is referred to the rated motor flux.</td>
<td></td>
</tr>
<tr>
<td>r1635</td>
<td><strong>Current model controller, I component / _mod_ctrl_I_comp</strong></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Description: Displays the I component of the current model controller.</td>
<td></td>
</tr>
<tr>
<td>r1636</td>
<td><strong>Current model controller output / _mod_ctrl_outp</strong></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Description: Displays the output of the current model controller.</td>
<td></td>
</tr>
<tr>
<td>r1637</td>
<td><strong>Current model, magnetizing current, d axis / _mod_I_mag_d-ax</strong></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Description: Displays the magnetizing current of the current model in the d-axis.</td>
<td></td>
</tr>
<tr>
<td>r1638</td>
<td><strong>Current model, magnetizing current, q axis / _mod_I_mag_q-ax</strong></td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Arms]</td>
</tr>
<tr>
<td>Description: Displays the magnetizing current of the current model in the q-axis.</td>
<td></td>
</tr>
</tbody>
</table>
### r1639
**CO: Current model Isq after actual value tracking / l_mod_isq track**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td>Displays the stator current in the q axis after current actual value tracking.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>ASM, PEM, REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>[Arms]</td>
<td>Sets the minimum excitation current. This means that negative excitation currents can be avoided.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>[Arms]</td>
<td></td>
</tr>
</tbody>
</table>

### p1640[0...n]
**CI: Excitation current actual value signal source / I_exc_ActVal_S_src**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>T</td>
<td>Sets the signal source for the excitation current actual value.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>ASM, PEM, REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>[%]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>[%]</td>
<td></td>
</tr>
</tbody>
</table>

### p1641
**Excitation current actual value / I_exc_act_val**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>Displays the excitation current actual value that is read in.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>ASM, PEM, REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.1 [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>50.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

### p1642[0...n]
**Minimum excitation current / Min I_exc**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>ASM, PEM, REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.1 [%]</td>
<td>Sets the minimum excitation current. This means that negative excitation currents can be avoided.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>50.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

### p1643[0...n]
**Gain factor, minimum excitation current closed-loop control / Min I_exc Kp**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>Sets the gain factor for the minimum excitation current, closed-loop control.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>ASM, PEM, REL</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00</td>
<td>This is active if the excitation current is below 75 % of p1642.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>5.00</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0390
- Refer to: p0170
- Refer to: p0180
- Refer to: p0505
- Refer to: p0160
- Refer to: p0070
**Parameters**

List of parameters

---

**r1644**
**CO: Excitation current monitoring output / I_exc_monit outp**

**VECTOR_G (n/M)**

- Can be changed: -
- Calculated: -
- Access level: 4

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6727

- **P-Group:** Closed-loop control
- **Units group:** 6_2
- **Unit selection:** p0505

- **Not for motor type:** ASM, PEM, REL
- **Scaling:** p2002
- **Expert list:** 1

- **Min**
  - [-Arms]
- **Max**
  - [-Arms]

**Description:** Displays the output of the excitation current monitoring for separately excited synchronous motors.

---

**p1645[0...6]**
**BI: Excitation feedback signals signal source / Exc FS S_src**

**VECTOR_G (n/M)**

- Can be changed: T
- Calculated: -
- Access level: 3

- **Data type:** Unsigned32 / Binary
- **Dynamic index:** -
- **Func. diagram:** 6495

- **P-Group:** Commands
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** ASM, PEM, REL
- **Scaling:** -
- **Expert list:** 1

- **Min**
  - -
- **Max**
  - 1

**Description:** Sets the signal source for the individual feedback signals from the excitation.

**Index:**

- [0] = Excitation ready to be powered up
- [1] = Excitation ready
- [2] = Excitation operational
- [3] = Excitation group signal fault
- [4] = Excitation group signal alarm
- [5] = Not used
- [6] = Not used

**Dependency:** Refer to: r1649

---

**p1646**
**Excitation monitoring time / Excit t_monit**

**VECTOR_G (n/M)**

- Can be changed: T
- Calculated: -
- Access level: 2

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6495

- **P-Group:** Commands
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** ASM, PEM, REL
- **Scaling:** -
- **Expert list:** 1

- **Min**
  - 2.0 [s]
- **Max**
  - 1300.0 [s]
- **Factory setting**
  - 20.0 [s]

**Description:** Sets the monitoring time of the excitation.

**Note:** After an ON command, the feedback signal must be received within this monitoring time.

---

**p1647**
**Excitation switch-off delay time / Exc t_off**

**VECTOR_G (n/M)**

- Can be changed: T
- Calculated: -
- Access level: 2

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 6495

- **P-Group:** Commands
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** ASM, PEM, REL
- **Scaling:** -
- **Expert list:** 1

- **Min**
  - 0.0 [s]
- **Max**
  - 5.0 [s]
- **Factory setting**
  - 0.8 [s]

**Description:** Sets the switch-off delay time to shut down the excitation equipment.

**Note:** The delay time starts if, when powering down, r0863.0 = 0. r1648.0 and r1648.3 are reset at the end of the delay time.
### List of parameters

**r1648.0...11**  
**CO/BO: Excitation, control word / Excitation STW**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Power up excitation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Excitation no OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Excitation no OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Excitation operation enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Excitation acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Master control by excitation equipment</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>ccw rotating field excitation invert excitation current setpoint</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the control word for the excitation equipment.

**Dependency:** Refer to: p1645

**r1649.0...7**  
**CO/BO: Excitation status word / Excitation ZSW**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Excitation ready to be powered up feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Excitation ready feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Excitation operational feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Excitation group signal fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Excitation group signal alarm</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the status word of the excitation equipment.

**Dependency:** Refer to: p1645

**r1650**  
**Current setpoint torque-generating before filter / Iq_set before filt**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the torque generating current setpoint Iq_set after the torque limits and the clock cycle interpolation is ahead of the current setpoint filters.

**r1651**  
**CO: Torque setpoint, function generator / M_set FG**  
VECTOR_G (n/M)  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>- [Nm]</td>
<td>- [Nm]</td>
<td>- [Nm]</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the torque setpoint of the function generator.
### p1653[0...n] Current setpoint torque-generating smoothing time minimum / Isq_s T_smoth min

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the minimum smoothing time constant for the setpoint of the torque-generating current components.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>PEM, REL</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.1 [ms]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>20.0 [ms]</td>
</tr>
</tbody>
</table>

### p1654[0...n] Curr. setpoint torque-gen. smoothing time field weakening range / Isq_s T_smoth FW

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the smoothing time constant for the setpoint of the torque-generating current components.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>PEM, REL</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.1 [ms]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>50.0 [ms]</td>
</tr>
</tbody>
</table>

### p1655[0...4] CI: Current setpoint/Speed actual value filter nat. frequency tuning / I/n_setp_filt f_n

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for tuning the natural frequency of the current setpoint filter 1, 2 and speed actual value filter 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>REL</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

### p1656[0...n] Current setpoint/Speed actual value filter activation / I_setp_filt act

<table>
<thead>
<tr>
<th>Description</th>
<th>Setting for activating/de-activating the current setpoint filter 1, 2 and speed actual value filter 5.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>REL</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
</tr>
</tbody>
</table>

#### Bit field

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Filter 1</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Filter 2</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Filter 5</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
</tbody>
</table>

### Dependency

The individual current setpoint/speed actual value filters are parameterized starting at p1657.

### Note

If not all of the filters are required, then the filters should be used consecutively starting from filter 1.
### List of parameters

**p1657[0...n]**  
**Current setpoint filter 1 type / I_set_filt 1 Typ**

**Data type:** Integer16  
**Dynamic index:** DDS, p0180  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1

**Description:** Sets the current setpoint filter 1 as low pass (PT2) or as extended general 2nd-order filter.

**Value:**
1: Low pass: PT2  
2: General 2nd-order filter

**Dependency:** Current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

**Note:**
For an extended general 2nd-order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

\[ f_{3\text{ dB bandwidth}} = \frac{2}{D_{\text{denominator}}} f_{\text{bandstop frequency}} \]

**Min:** 1  
**Max:** 2  
**Factory setting:** 1

**p1658[0...n]**  
**Current setpoint filter 1 denominator natural frequency / I_set_filt 1 fn_n**

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1

**Description:** Sets the denominator natural frequency for current setpoint filter 1 (PT2, general filter).

**Dependency:** Current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

**Min:** 0.5 [Hz]  
**Max:** 16000.0 [Hz]  
**Factory setting:** 1999.0 [Hz]

**p1659[0...n]**  
**Current setpoint filter 1 denominator damping / I_set_filt 1 D_n**

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Units group:** -  
**Expert list:** 1

**Description:** Sets the denominator damping for current setpoint filter 1.

**Dependency:** Current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

**Min:** 0.001  
**Max:** 10.000  
**Factory setting:** 0.700

**p1660[0...n]**  
**Current setpoint filter 1 numerator natural frequency / I_set_filt 1 fn_z**

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Units group:** -  
**Expert list:** 1

**Description:** Sets the numerator natural frequency for current setpoint filter 1 (general filter).

**Dependency:** Current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.
**List of parameters**

### p1661[0...n]
**Current setpoint filter 1 numerator damping / \( I_{\text{setfilt}} 1 \ D_z \)**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 5710, 6710</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>10.000</td>
<td>0.700</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the numerator damping for current setpoint filter 1.

**Dependency:**
Current setpoint filter 1 is activated via p1656.0 and parameterized via p1657 ... p1661.

### p1662[0...n]
**Current setpoint filter 2 type / \( I_{\text{setfilt}} 2 \) Typ**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 5710, 6710</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the current setpoint filter 2 as low pass (PT2) or as extended general 2nd-order filter.

**Value:**
1: Low pass: PT2
2: General 2nd-order filter

**Dependency:**
Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

**Note:**
For an extended general 2nd-order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:
\[ f_{3\text{dB bandwidth}} = 2 \times D_{\text{denominator}} \times f_{\text{bandstop frequency}} \]

### p1663[0...n]
**Current setpoint filter 2 denominator natural frequency / \( I_{\text{setfilt}} 2 \ fn_n \)**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 5710, 6710</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.5 [Hz]</td>
<td>16000.0 [Hz]</td>
<td>1999.0 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the denominator natural frequency for current setpoint filter 2 (PT2, general filter).

**Dependency:**
Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.

### p1664[0...n]
**Current setpoint filter 2 denominator damping / \( I_{\text{setfilt}} 2 \) D_n**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 5710, 6710</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.001</td>
<td>10.000</td>
<td>0.700</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the denominator damping for current setpoint filter 2.

**Dependency:**
Current setpoint filter 2 is activated via p1656.1 and parameterized via p1662 ... p1666.
Parameters

List of parameters

### p1665[0...n]
**Current setpoint filter 2 numerator natural frequency / I_set_filt 2 fn_z**

- **VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Closed-loop control
- **Units group:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.5 [Hz]
- **Max:** 16000.0 [Hz]
- **Factory setting:** 1999.0 [Hz]

**Description:**
Sets the numerator natural frequency for current setpoint filter 2 (general filter).

**Dependency:**
Current setpoint filter 2 is activated via p1666.1 and parameterized via p1662 ... p1666.

### p1666[0...n]
**Current setpoint filter 2 numerator damping / I_set_filt 2 D_z**

- **VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Closed-loop control
- **Units group:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.000
- **Max:** 10.000
- **Factory setting:** 0.700

**Description:**
Sets the numerator damping for current setpoint filter 2.

**Dependency:**
Current setpoint filter 2 is activated via p1666.1 and parameterized via p1662 ... p1666.

### p1677[0...n]
**Speed actual value filter 5 type / n_act_filt 5 type**

- **VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Data type:** Integer16
- **Dynamic index:** DDS, p0180
- **P-Group:** Closed-loop control
- **Units group:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 1
- **Max:** 2

**Description:**
Sets speed actual value filter 5 as low pass (PT2) or as extended general 2nd order filter.

**Value:**
1: Low pass: PT2
2: General 2nd-order filter

**Dependency:**
The speed actual value filter is activated with p1656.4 and parameterized with p1677 ... p1681.

**Note:**
For an extended general 2nd-order filter, by inserting the same natural frequency in both the numerator and in the denominator, i.e. bandstop frequency, a bandstop filter is implemented. If the numerator damping of zero is selected, the bandstop frequency is completely suppressed.

The denominator damping can be determined from the equation for the 3 dB bandwidth:

\[ f_{3\text{dB bandwidth}} = 2 \cdot D_{\text{denominator}} \cdot f_{\text{bandstop frequency}} \]

### p1678[0...n]
**Speed actual value filter 5 denominator natural frequency / n_act_filt 5 fn_d**

- **VECTOR_G (n/M)**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Closed-loop control
- **Units group:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.5 [Hz]
- **Max:** 16000.0 [Hz]
- **Factory setting:** 1999.0 [Hz]

**Description:**
Sets the denominator natural frequency for speed actual value filter 5 (PT2, general filter).

**Dependency:**
The speed actual value filter is activated with p1656.4 and parameterized with p1677 ... p1681.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1679[0...n]</td>
<td>Speed actual value filter 5 denominator damping / n_act_filt 5 D_d</td>
<td>Sets the denominator damping for speed actual value filter 5.</td>
<td>0.001 - 10.000 - 0.700</td>
</tr>
<tr>
<td>p1680[0...n]</td>
<td>Speed actual value filter 5 numerator natural frequency / n_act_filt 5 fn_n</td>
<td>Sets the numerator natural frequency for speed actual value filter 5 (general filter).</td>
<td>0.5 [Hz] - 16000.0 [Hz] - 1999.0 [Hz]</td>
</tr>
<tr>
<td>p1681[0...n]</td>
<td>Speed actual value filter 5 numerator damping / n_act_filt 5 D_n</td>
<td>Sets the numerator damping for speed actual value filter 5.</td>
<td>0.000 - 10.000 - 0.700</td>
</tr>
<tr>
<td>p1699</td>
<td>Filter data acceptance / Filt data accept</td>
<td>Activates data acceptance for parameter changes for the filter.</td>
<td>0 - 1 - 0</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32
**Dynamic index:** DDS, p0180
**P-Group:** Closed-loop control
**Units group:** -
**Unit selection:** -
**Not for motor type:** REL
**Min:** 0.001
**Max:** 10.000
**Factory setting:** 0.700

**Access level:** 3
**Func. diagram:** 4715
**DDS, p0180**
**Expert list:** 1
**Can be changed:** U, T
**Calculated:** CALC_MOD_CON

**Data type:** Integer16
**Dynamic index:** -
**P-Group:** Closed-loop control
**Units group:** -
**Unit selection:** -
**Not for motor type:** REL
**Min:** 0
**Max:** 1
**Factory setting:** 0

**Access level:** 3
**Func. diagram:** -
**Expert list:** 1

**Can be changed:** U, T

**Description:** The speed actual value filter is activated with p1656.4 and parameterized with p1677 ... p1681.

**Dependency:** Refer to: p1416, p1656, p1657, p1658, p1659, p1660, p1661, p1662, p1663, p1664, p1665, p1666
### List of parameters

#### p1702[0...n]
**Isd current controller pre-control scaling / Isd_ctr_prectrScal**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEeTEE_G (n/M)</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6714</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>200.0 [%]</td>
<td>70.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Sets the scaling of the dynamic current controller pre-control for the flux-generating current component Isd. The parameter is effective for permanent and separately-excited synchronous motors.

#### p1703[0...n]
**Isq current controller pre-control scaling / Isq_ctr_prectrScal**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: CALC_MOD_CON</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEeTEE_G (n/M)</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6714</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>200.0 [%]</td>
<td>70.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling of the dynamic current controller pre-control for the torque/force-generating current component Isq.

#### p1704[0...n]
**Isq current controller pre-control EMF scaling / Isq_ctrl EMF scal**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEeTEE_G (n/M)</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6714, 6726</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>200.0 [%]</td>
<td>100.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling of the EMF pre-control for the Isq current controller.

#### p1705[0...n]
**Flux setpoint/actual value tracking threshold / Flux track thresh**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEeTEE_G (n/M)</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6714, 6726</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, PEM, REL</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>100.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Threshold for the setpoint - actual value tracking of the EMF pre-control of the Isq current controller.

#### p1715[0...n]
**Current controller P gain / I_ctrl Kp**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: CALC_MOD_CON</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEeTEE_G (n/M)</td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 1710, 6714, 7017</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.000</td>
<td>100000.000</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the proportional gain of the current controller for the lower adaptation current range. This value is automatically pre-set using p3900 or p0340 when commissioning has been completed.

**Dependency:**
Refer to: p0391, p0392, p0393

**Note:**
For p0393 = 100 %, the current controller adaptation is disabled and p1715 is effective over the entire range.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1717[0...n]</td>
<td><strong>Current controller integral-action time / I_ctrl Tn</strong></td>
<td>FloatingPoint32</td>
<td>3</td>
</tr>
<tr>
<td>VECTOR_G (n/M)</td>
<td></td>
<td>Dynamic index: DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
<td>Calculated: CALC_MOD_CON</td>
<td>Func. diagram: 1710, 5714, 6714, 7017</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>1000.00 [ms]</td>
<td>2.00 [ms]</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Sets the integral-action time of the current controller.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p1715</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r1718 | **CO: Isq controller output / Isq_ctrl outp** | FloatingPoint32 | 4 |
| VECTOR_G (n/M) | | Dynamic index: - | |
| Can be changed: - | Calculated: - | Func. diagram: 6714 | |
| Data type: FloatingPoint32 | | | |
| P-Group: Closed-loop control | | | |
| Not for motor type: REL | | | |
| Min | Max | Factory setting | |
| - [V rms] | - [V rms] | - [V rms] | |
| **Description:** | Displays the actual output of the Isq current controller (torque/force generating current, PI controller). | | |
| **Description:** | The value contains the proportional and integral components of the PI controller. | | |

| r1719 | **Isq controller integral component / Isq_ctrl I_comp** | FloatingPoint32 | 4 |
| VECTOR_G (n/M) | | Dynamic index: - | |
| Can be changed: - | Calculated: - | Func. diagram: 6714 | |
| Data type: FloatingPoint32 | | | |
| P-Group: Closed-loop control | | | |
| Not for motor type: REL | | | |
| Min | Max | Factory setting | |
| - [V rms] | - [V rms] | - [V rms] | |
| **Description:** | Displays the integral component of the Isq current controller (torque/force-generating current, PI controller). | | |

| r1723 | **CO: Isd controller output / Isd_ctrl outp** | FloatingPoint32 | 4 |
| VECTOR_G (n/M) | | Dynamic index: - | |
| Can be changed: - | Calculated: - | Func. diagram: 6714 | |
| Data type: FloatingPoint32 | | | |
| P-Group: Closed-loop control | | | |
| Not for motor type: REL | | | |
| Min | Max | Factory setting | |
| - [V rms] | - [V rms] | - [V rms] | |
| **Description:** | Displays the actual output of the Isd current controller (flux-generating current, PI controller). | | |
| **Description:** | The value contains the proportional and integral components of the PI controller. | | |

| r1724 | **Isd controller integral component / Isd_ctrl I_comp** | FloatingPoint32 | 4 |
| VECTOR_G (n/M) | | Dynamic index: - | |
| Can be changed: - | Calculated: - | Func. diagram: 6714 | |
| Data type: FloatingPoint32 | | | |
| P-Group: Closed-loop control | | | |
| Not for motor type: REL | | | |
| Min | Max | Factory setting | |
| - [V rms] | - [V rms] | - [V rms] | |
| **Description:** | Displays the integral component of the Isd current controller (flux-generating current, PI controller). | | |
### List of parameters

**r1725**  
**Lsd controller integral component limit / Isd_ctrl I_limit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Displays the limit value for the integral component of the Isd current controller.</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**p1726[0...n]**  
**Quadrature arm decoupling, scaling / Transv_decpl scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Sets the scaling of the quadrature arm decoupling</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>200.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>75.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**p1727[0...n]**  
**Quadrature arm decoupling at voltage limit scaling / TrnsvDecplVmax Scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Sets the scaling of quadrature arm decoupling when the voltage limit is reached.</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>200.0 [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>50.0 [%]</td>
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</table>

**r1728**  
**De-coupling voltage, in-line axis / U_dir-axis_decoupl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Displays the actual output of the quadrature channel de-coupling for the d axis.</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>

**r1729**  
**De-coupling voltage, quadrature axis / U_quad_decoupl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Displays the actual output of the quadrature channel de-coupling for the q axis.</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>REL</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [Vrms]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [Vrms]</td>
<td></td>
</tr>
</tbody>
</table>
**p1730[0...n]**  
**Isd controller integral component shutdown threshold / Isd_ctr I_compDeac**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: PEM, REL, FEM  
Min: 30 [%]  
Max: 150 [%]  
Factory setting: 30 [%]  

**Description:**  
Sets the speed threshold for deactivating the integral component of the Isd controller. The d current controller is only effective as P controller for speeds greater than the threshold value. Instead of the integral component, the quadrature arm decoupling is effective.

**Warning:**  
For settings above 80%, the d current controller is active up to the field weakening limit. When operated at the voltage limit, this can result in an unstable behavior. In order to avoid this, the dynamic voltage reserve p1574 should be increased.

**Note:**  
The parameter value is referred to the synchronous rated motor speed.

**p1731[0...n]**  
**Isd controller combination current time component / Isd ctrl iCombi T1**  
VECTOR_G (n/M)  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: PEM, REL, FEM  
Min: 0.00 [ms]  
Max: 10000.00 [ms]  
Factory setting: 0.00 [ms]  

**Description:**  
Sets the time constant to calculate the d current DC component difference (combination current) to add to the d current controller actual value. The additional input is de-activated with p1731 = 0.

**r1732[0...1]**  
**CO: Direct-axis voltage setpoint / Direct U set**  
VECTOR_G (n/M)  
Can be changed: -  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min: - [Vrms]  
Max: - [Vrms]  
Factory setting: - [Vrms]  

**Description:**  
Displays the direct-axis voltage setpoint Ud.  
[0] = Unsmoothed  
[1] = Smoothed with p0045

**r1733[0...1]**  
**CO: Quadrature-axis voltage setpoint / Quad U set**  
VECTOR_G (n/M)  
Can be changed: -  
Data type: FloatingPoint32  
P-Group: Closed-loop control  
Not for motor type: REL  
Min: - [Vrms]  
Max: - [Vrms]  
Factory setting: - [Vrms]  

**Description:**  
Displays the quadrature-axis component of voltage setpoint Uq.  
[0] = Unsmoothed  
[1] = Smoothed with p0045
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access level</th>
<th>Units</th>
<th>Not for motor type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p1740[0...n]</strong></td>
<td>Gain resonance damping for encoderless closed-loop control / Gain res_damp</td>
<td>VECTOR_G (n/M)</td>
<td>3</td>
<td>-</td>
<td>REL</td>
</tr>
<tr>
<td><strong>p1744[0...n]</strong></td>
<td>Motor model speed threshold stall detection / MotMod n_thr stall</td>
<td>VECTOR_G (n/M)</td>
<td>3</td>
<td>3_1</td>
<td>REL, FEM</td>
</tr>
<tr>
<td><strong>p1745[0...n]</strong></td>
<td>Motor model error threshold stall detection / MotMod ThreshStall</td>
<td>VECTOR_G (n/M)</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>r1746</strong></td>
<td>Motor model error signal stall detection / MotMod sig stall</td>
<td>VECTOR_G (n/M)</td>
<td>4</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Description:

- **Gain resonance damping for encoderless closed-loop control / Gain res_damp**
  - **Can be changed:** U, T
  - **Calculated:** CALC_MOD_CON
  - **Access level:** 3
  - **Data type:** FloatingPoint32
  - **Dynamic index:** DDS, p0180
  - **Units group:** -
  - **Unit selection:** -
  - **Scaling:** -
  - **Expert list:** 1
  - **Min:** 0.000
  - **Max:** 10.000
  - **Factory setting:** 0.025

- **Motor model speed threshold stall detection / MotMod n_thr stall**
  - **Can be changed:** U, T
  - **Calculated:** CALC_MOD_REG
  - **Access level:** 3
  - **Data type:** FloatingPoint32
  - **Dynamic index:** DDS, p0180
  - **Units group:** 3_1
  - **Unit selection:** p0505
  - **Scaling:** -
  - **Expert list:** 1
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
  - **Factory setting:** 100.00 [rpm]

- **Motor model error threshold stall detection / MotMod ThreshStall**
  - **Can be changed:** U, T
  - **Calculated:** CALC_MOD_REG
  - **Access level:** 3
  - **Data type:** FloatingPoint32
  - **Dynamic index:** DDS, p0180
  - **Units group:** -
  - **Unit selection:** -
  - **Scaling:** -
  - **Expert list:** 1
  - **Min:** 0.0 [%]
  - **Max:** 1000.0 [%]
  - **Factory setting:** 5.0 [%]

- **Motor model error signal stall detection / MotMod sig stall**
  - **Can be changed:** -
  - **Calculated:** -
  - **Access level:** 4
  - **Data type:** FloatingPoint32
  - **Dynamic index:** -
  - **Units group:** -
  - **Unit selection:** -
  - **Scaling:** -
  - **Expert list:** 1
  - **Min:** - [%]
  - **Max:** - [%]
  - **Factory setting:** - [%]

#### Note:

- **Gain resonance damping for encoderless closed-loop control / Gain res_damp**
  - Defines the gain of the controller for resonance damping for operation with sensorless vector control in the range that current is injected.

- **Motor model speed threshold stall detection / MotMod n_thr stall**
  - Sets the speed threshold value to detect a stalled motor.
  - If the adaptation controller output exceeds the parameterized speed difference, then bit 11 in status word p1408 is set.
  - **Dependency:** If a stalled drive is detected (p1408.11 set), fault 7902 is output after the delay time in p2178.
  - **Refer to:** p2178
  - **Note:** Speed monitoring is only effective in operation with a speed encoder (refer to p1300).
  - Stalling is also identified if steps/jumps occur in the speed signal, which exceed the value in p0492.

- **Motor model error threshold stall detection / MotMod ThreshStall**
  - Sets the fault threshold in order to detect a motor that has stalled.
  - If the error signal (r1746) exceeds the parameterized error threshold, then status signal r1408.12 is set to 1.
  - **Dependency:** If a stalled drive is detected (r1408.12 = 1), fault F07902 is output after the delay time set in p2178.
  - **Refer to:** p2178
  - **Note:** Monitoring is only effective in the low-speed range (below p1755 * (100% - p1756)).

- **Motor model error signal stall detection / MotMod sig stall**
  - Signal to initiate stall detection
  - **Note:** The signal is not calculated while magnetizing and only in the low speed range (below p1755 * (100 % - p1756)).
### List of parameters

#### p1748[0...n] Motor model lower changeover speed $n_{set} \rightarrow n_{act}$ / Lower $n_{chngov}$

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the lower speed for the transition &quot;n_set \rightarrow n_act&quot; in encoderless operation. This value is entered as a percentage referred to p1749.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>Refer to: p1749, p1752</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td>50.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>90.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

#### p1749[0...n] Motor model upper changeover speed / increase changeover speed / Upper / $n_{chgov}$

<table>
<thead>
<tr>
<th>Description</th>
<th>For the separately-excited synchronous motor the following applies: Sets the upper speed for the transition &quot;n_set \rightarrow n_act&quot; in sensorless operation. This value is entered as a percentage of p1755. For the encoderless closed-loop control of the induction motor, the following applies: Depending on the machine data, the drive has calculated a minimum value of the operating frequency for rugged operation. If the minimum value is greater than the lower changeover limit parameterized with $p_{1755} \cdot (1 - 2 \cdot p_{1756})$, then the difference is displayed using $p_{1749} \cdot p_{1755}$.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>Refer to: p1748, p1752, p1755, p1756</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td>50.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>99.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

#### p1750[0...n] Motor model configuration / MotMod config

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the configuration for the motor model. Bit 0 = 1: Forces open-loop speed-controlled starting (ASM). Bit 1 = 1: Forces the system to pass through frequency zero, open-loop-controlled (ASM). Bit 2 = 1: Drive remains in full closed-loop control mode, even at zero frequency (ASM). Bit 3 = 1: Motor model evaluates the saturation characteristic (ASM). Bit 4 = 1: Time-controlled change between current and observer models (ASM). Bit 5 = 1: HF signal injection to estimate the continuous rotor position (PESM). Bit 6 = 1: If the motor is blocked, sensorless vector control remains speed-controlled (ASM). Bit 7 = 1: Use rugged switchover limits to switchover the model between open-loop and closed-loop controlled operation (ASM).</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Controlled start</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Controlled through 0 Hz</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Closed-loop ctrl oper. down to zero freq. for passive loads</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Motor model $Lh_{pre} = f(PsiEst)$</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
**Caution:**
Do not use bit 6 = 1 if the motor can be slowly reversed by the load at the torque limit. Long delay times due to blocking (p2177 > p1758) can cause the motor to stall. In this case you should deactivate the function or use closed-loop control throughout the speed range (note the information re bit 2 = 1).

**Note:**
Bit 0 ... 3 only have influence for sensorless vector control, bit 4 only for vector control with encoder. Bit 2 is pre-assigned depending on p0500.

Re bit 2 = 1:
The sensorless vector control is effective down to zero frequency. A change is not made into the open-loop speed controlled mode.

This operating mode is possible for passive loads. These include applications where the load itself does not generate any active torque and therefore only acts reactively to the drive torque of the induction motor.

If bit 2 = 1, then bit 3 is automatically set to 1. Manual de-selection is possible and may be sensible if the saturation characteristic (p1960) was not measured for third-party motors. Generally, for standard SIEMENS motors, the already pre-assigned (default value) saturation characteristic is adequate.

When the bit is set, the selection of bits 0 and 1 is ignored.

Re bit 2 = 0:
If the model feedback is deactivated (p1784 = 0), with bit 2 = 0, then bit 3 is also automatically set to 0.

Re bit 5 = 1:
The selection of HF signal injection is only relevant for permanent-magnet synchronous motors (PESM). Therefore, activation of bit 5 is only possible outside of motor commissioning (p0010 = 0).

In order to achieve user-friendly configuration of the power unit components in the oversampling mode, when activated for the first time, initially p1810 bit 3 is set, and then an automatic system boot is initiated. This is only possible if all of the axes connected to the CU are switched off (refer to the setting conditions for p0009); otherwise, it is not possible to set the bit.

When deactivating p1750 bit 5, p1810 bit 3 remains unchanged and the system does not boot again.

Therefore, to reverse configure the power unit components from the oversampling mode (after manually deselecting p1750 bit 5) then initially p1810 bit 3 must be manually deleted and then a manual warm restart initiated.

As an alternative to a warm restart: save the parameters and carry out a POWER ON (switch-off/switch-on). When the function "safety without encoder" (p9306/p9506) is activated, this setting is not permissible and results in monitoring errors.

Re bit 6 = 1:
The following applies for encoderless vector control of induction motors:
For a blocked motor (see p2175, p2177) the time condition in p1758 is bypassed and a change is not made into open-loop controlled operation.

Re bit 7 = 1:
The following applies for encoderless vector control of induction motors:
If the changeover limits are parameterized too low (p1755, p1756), then they are automatically increased to rugged values by the absolute amount p1749 * p1755.

The effective time condition for changing over into open-controlled operation is obtained from the minimum of p1758 and 0.5 * r0384.

Activation can make sense for applications that demand a high torque at low frequencies and therefore low speed gradients.

It must be ensured that p1610, p1611 have been adequately parameterized.

### r1751

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>Closed-loop control</td>
<td>-</td>
<td>-</td>
<td>REL, FEM</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the status of the motor model.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Bit field: Bit Signal name 1 signal 0 signal FP
00 Controlled operation Active Inactive 6721
01 Set ramp-function generator Active Inactive -
02 Stop RslH adaptation Yes No -
03 Feedback Active Inactive -
04 Encoder operation Active Inactive -
05 Holding angle Yes No -
06 Acceleration criterion Active Inactive -
07 Set angular integrator PEM No Yes -
08 Stop Kt adaptation PEM No Yes -
09 PolID active PEM SLVC No Yes -
10 I injection PEM No Yes -
11 Speed controller output cannot be set to zero Yes No -
12 Rs adapt waits Yes No -
13 mot oper Yes No -
14 Stator frequency sign Positive Negative -
15 Torque sign Motor mode Regenerative mode -
16 Pulse injection active PEM Yes No -
17 Operation with rugged model feedback Enabled Inhibited -
18 Operation of the current model with current feedback Enabled Inhibited -
19 Current feedback in the current model Active Inactive -
20 Rugged increase of the changeover limits Active Inactive -

Note:
Re bit 17:
Displays the status when enabling the rugged model feedback (p1784) for operation with and without encoder.
The feedback is used to increase the parameter ruggedness of the motor model and is effective in the operating range of the two-component closed loop current control.
Re bit 18:
Displays the status when enabling the differential current feedback in the current model for operation with encoder.
The function is automatically enabled with p1784 > 0 or p1731 > 0. The feedback is used for a rugged change between the current model and complete machine model with active rugged model feedback and combination current.
Re bit 19:
Displays the currently active stator circuit feedback in current model operation.
Re bit 20:
Displays the currently effective increase of the changeover limits by the value p1749 * p1755.

p1752[0...n] Motor model changeover speed operation with encoder / MotMod n_chgov enc
VECTOR_G
Can be changed: U, T Calculated: CALC_MOD_REG Access level: 3
Data type: FloatingPoint32 Dynamic index: DDS, p0180 Func. diagram: -
P-Group: Closed-loop control Units group: 3_1 Unit selection: p0505
Not for motor type: REL Scaling: - Expert list: 1
Min Max Factory setting
0.00 [rpm] 210000.00 [rpm] 210000.00 [rpm]

Description:
Sets the speed to change over the motor model for operation with encoder.
Dependency:
In U/f characteristic mode the parameter is of no significance.
Using the friction characteristic for operation with encoder:
When changing the motor model changeover speed p1752, the points along the friction characteristic should be recalculated (p0340 = 5) and the friction characteristic recorded again (p3845). For slight changes, only the associated friction characteristic points must be recorded (see p3844).
Refer to: p1756
### List of parameters

**p1753[0...n]**  
**Motor model changeover speed hysteresis operation with encoder / MotMod n_chgGovHysE**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Closed-loop control</td>
<td>-</td>
<td>REL</td>
<td>-</td>
<td>0.0 [%]</td>
<td>90.0 [%]</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the hysteresis for the changeover speed of the motor model for operation with speed encoder.

**Dependency:** Refer to: p1752

**Note:**
- The value refers to p1752. In the case of separately excited synchronous motors, the lower hysteresis value is calculated with p1752 * p1753; in the case of all other types of motor, p1752 * (1 - p1753) is used.

**p1754[0...n]**  
**Flux angle difference smoothing time / Angle diff T_smth**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Closed-loop control</td>
<td>-</td>
<td>ASM, REL</td>
<td>-</td>
<td>0.1 [ms]</td>
<td>10000.0 [ms]</td>
<td>5.0 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the smoothing time constant to filter the main flux angle difference from the voltage and current models.

The filtered value is included in the calculation of the total flux angle.

PESM: Sets the smoothing time constant for the angular difference display between motor model and encoder.

**Note:**
- In the case of a separately excited synchronous motor and sensorless vector control, the parameter must be set to
- the minimum value to improve motor model changeover.

**p1755[0...n]**  
**Motor model changeover speed encoderless operation / MotMod n_chgSnsorl**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Closed-loop control</td>
<td>3_1</td>
<td>REL</td>
<td>-</td>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>210000.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets the speed to change over the motor model to encoderless operation.

**Dependency:**
- In U/f characteristic mode the parameter is of no significance.

Refer to: p1749, p1756

**Notice:**
- The changeover speed represents the steady-state minimum speed up to which the motor model can be used in sensorless steady-state operation.

If the stability is not adequate close to the changeover speed, it may make sense to increase the parameter value.

**Note:**
- The changeover speed applies for the changeover between open-loop and closed-loop control mode.

**p1756**  
**Motor model changeover speed hysteresis encoderless operation / MotMod n_chgGovHyS**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Units group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Closed-loop control</td>
<td>-</td>
<td>REL</td>
<td>-</td>
<td>0.0 [%]</td>
<td>95.0 [%]</td>
<td>50.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the hysteresis for the changeover speed of the motor model for encoderless operation.
Dependency: In U/f characteristic mode the parameter is of no significance.
Refer to: p1755

Note: The parameter value refers to p1755.
In the case of separately excited synchronous motors, the lower hysteresis value is calculated with p1755 * p1756; in the case of all other types of motor, p1755 * (1 - p1756) is used.

p1757[0...n] Motor model w/o enc. op./cl.-loop controlled stab. controller Kp / MotMod w/o enc Kp

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>(n/M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.01</td>
<td>10.00</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the gain of the transient response controller when the motor model changes over from open-loop controlled operation to closed-loop controlled operation.

Note: Only for ASM and PSM in encoderless operation:
The settling range starts at 0.5 * p1755 * p1756.
For ASM it ends at p1755 * p1756 or at p1755, if p1759 is at the maximum value.
For PSM it always ends at p1755 * p1756.

p1758[0...n] Motor model changeover delay time closed/open-loop control / MotMod t cl_op

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>(n/M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>100 [ms]</td>
<td>10000 [ms]</td>
</tr>
<tr>
<td>1000 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the minimum time for falling below the changeover speed when changing from closed-loop controlled operation to open-loop controlled operation.

Dependency: Refer to: p1755, p1756

p1759[0...n] Motor model changeover delay time open/closed-loop control / MotMod t op_cl

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>(n/M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>PEM, REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>2000 [ms]</td>
</tr>
<tr>
<td>0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the minimum time for exceeding the changeover speed when changing from open-loop controlled operation to closed-loop controlled operation.

Dependency: Refer to: p1755, p1756

Note: When p1759 = 2000 ms, the delay time becomes ineffective and the model changeover is determined by the output frequency only.

p1760[0...n] Motor model with encoder speed adaptation Kp / MotMod wE n_ada Kp

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>(n/M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.000</td>
<td>100000.000</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the proportional gain of the controller for speed adaptation with encoder.
### p1761[0...n] Motor model with encoder speed adaptation Tn / MotMod wE n_ada Tn

**VECTOR_G (n/M)**

Can be changed: U, T  
Calculated: CALC_MOD_CON  
Access level: 3

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Func. diagram:** -

**P-Group:** Closed-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** REL, FEM  
**Scaling:** -  
**Expert list:** 1

**Min**  
0 [ms]  
**Max**  
1000 [ms]  
**Factory setting**  
4 [ms]

**Description:**  
Sets the integral-action time of the controller for speed adaptation with encoder.

### r1762[0...1] Motor model deviation component 1 / MotMod dev comp 1

**VECTOR_G (n/M)**

Can be changed: -  
Calculated: -  
Access level: 4

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 6721, 6730, 6731

**P-Group:** Closed-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** REL, FEM  
**Scaling:** -  
**Expert list:** 1

**Min**  
-  
**Max**  
-  
**Factory setting**  
-

**Description:**  
Induction motor (ASM): Displays the referred imaginary system deviation for the adaptation circuit of the motor model.  
Permanent-magnet synchronous motor (PESM): Displays the system deviation for speed adaptation.  
$r1762.0$: Angular deviation [rad-el] of the estimated EMF.  
$r1762.1$: Angular deviation [rad-el] of the low-level signal response for pulse technique.

**Index:**  
[0] = Deviation Model1  
[1] = Deviation Model2

### r1763 Motor model deviation component 2 / MotMod dev comp 2

**VECTOR_G (n/M)**

Can be changed: -  
Calculated: -  
Access level: 4

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Closed-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** REL, FEM  
**Scaling:** -  
**Expert list:** 1

**Min**  
-  
**Max**  
-  
**Factory setting**  
-

**Description:**  
Induction motor (ASM): Displays the referred real system deviation for the adaptation circuit of the motor model.  
Permanent-magnet synchronous motor (PESM): Not used.

### p1764[0...n] Motor model without encoder speed adaptation Kp / MotMod woE n_adaKp

**VECTOR_G (n/M)**

Can be changed: U, T  
Calculated: CALC_MOD_CON  
Access level: 3

**Data type:** FloatingPoint32  
**Dynamic index:** DDS, p0180  
**Func. diagram:** 6730

**P-Group:** Closed-loop control  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** REL, FEM  
**Scaling:** -  
**Expert list:** 1

**Min**  
0.000  
**Max**  
100000.000  
**Factory setting**  
1000.000

**Description:**  
Sets the proportional gain of the controller for speed adaptation without encoder.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Index</th>
<th>Access level</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1765</td>
<td>Motor model, speed adaptation Kp effective / MotM n_ada Kp act</td>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
</tr>
<tr>
<td></td>
<td>Displays the effective proportional gain of the controller for the speed adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1766</td>
<td>Motor model voltage model calculation enable / U_mod calc enab</td>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Sets the speed to enable the voltage model to calculate the speed actual value. This value is entered as a percentage referred to p1752.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p1767</td>
<td>Motor model without encoder speed adaptation Tn / MotMod woE n_adaTn</td>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T</td>
<td>Calculated: CALC_MOD_CON</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Sets the integral time of the controller for speed adaptation without encoder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r1768</td>
<td>Motor model, speed adaptation Vi effective / MotM n_ada Vi act</td>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
</tr>
<tr>
<td></td>
<td>Displays the effective gain of the integral component of the controller for speed adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r1770</td>
<td>CO: Motor model speed adaptation proportional component / MotMod n_adapt Kp</td>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Displays the P component of the controller for speed adaptation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>Access level:</td>
<td>Data type:</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>r1771</td>
<td>Motor model speed adaptation I comp. / MotMod n_adapt Tn</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r1773[0...1]</td>
<td>Motor model slip speed / MotMod slip</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>p1774[0...n]</td>
<td>Motor model, offset voltage compensation alpha / MotMod offs comp A</td>
<td>U, T</td>
<td>-</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>p1775[0...n]</td>
<td>Motor model, offset voltage compensation beta / MotMod offs comp B</td>
<td>U, T</td>
<td>-</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>r1776[0...6]</td>
<td>Motor model status signals / MotMod status sig</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>FloatingPoint32</td>
</tr>
</tbody>
</table>
Index 0: Changeover ramp between current and voltage models
Index 1: Changeover ramp for model tracking (encoderless induction motors only)
Index 2: Changeover ramp for zero frequency range (encoderless induction motors only)
Index 3: Transition ramp actual speed from speed setpoint to model value (encoderless FEM)
Index 4: Speed controller enable (encoderless FEM)
Index 5: Transition ramp between current and voltage models (encoderless FEM)
Index 6: Transition ramp for EMF deviation at PLL input (encoderless PESM)

Index:
[0] = Changeover ramp motor model
[1] = Changeover ramp model tracking
[2] = Changeover ramp zero frequency encoderless ASM
[3] = Changeover ramp actual speed encoderless FEM
[4] = Enable speed controller encoderless FEM
[5] = Changeover ramp motor model encoderless FEM
[6] = Changeover ramp motor model encoderless PESM

Note: Indices 3 through 5 are only relevant in the case of encoderless control of separately excited synchronous motors.

r1778  Motor model flux angle difference / MotMod ang. diff.
VECTOR_G (n/M)
Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Closed-loop control Units group: - Unit selection: -
Not for motor type: REL Scaling: p2005 Expert list: 1
Min - [°] Max - [°] Factory setting
Description: Induction motor (ASM):
Displays the difference between the motor model flux angle and the transformation angle.
Permanent-magnet synchronous motor (PESM):
Displays the angular difference between motor model and encoder.
Dependency: A setting for smoothing the display can be made using p1754.

r1779  Motor model absolute flux / MotMod abs flux
VECTOR_G (n/M)
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Closed-loop control Units group: - Unit selection: -
Not for motor type: PEM, REL, FEM Scaling: PERCENT Expert list: 1
Min - [%] Max - [%] Factory setting
Description: Displays the absolute value of the flux of the motor model.

p1780[0...n]  Motor model adaptation configuration / MotMod adapt conf
VECTOR_G
Can be changed: U, T Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: DDS, p0180 Func. diagram: -
P-Group: Closed-loop control Units group: - Unit selection: -
Not for motor type: REL Scaling: - Expert list: 1
Min - Factory setting
0000 0000 0111 1100 bin
Description: Sets the configuration for the adaptation circuit of the motor model.
Induction motor (ASM): Rs, Rr (only for operation with encoder), Lh and offset compensation.
Permanent magnet synchronous motor (PESM): kT

Bit field:
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Select motor model ASM Rs adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Select motor model ASM Lh adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Select motor model PEM kT adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Select motor model offset adaptation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>No.</th>
<th>Description</th>
<th>Values</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>Select ASM Rr adaptation (only with encoder)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06</td>
<td>Select pole position identification PEM encoderless</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>07</td>
<td>Select T(valve) with Rs adaptation</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Filter time combination current like current control integral time</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Dependency:**

In U/f characteristic operating mode only bit 7 is relevant.

For active motor model feedback (see p1784), the Lh adaptation is internally deactivated automatically.

When the power units are connected in parallel with separate, offset motor winding systems (p7003 = 2), then the compensation of the valve interlocking times should be implemented as Rs adaptation (bit 7 = 1).

**Note:**

ASM: Induction motor

PEM: Permanent magnet synchronous motor

When selecting the compensation of the valve interlocking via Rs (bit 7), the compensation in the gating unit is deactivated and is instead taken into account in the motor model.

In order that the correction values of the Rs, Lh and kT adaptation (selected using Bit 0 ... Bit 2) are correctly accepted when changing over the drive data set, a dedicated motor number must be entered into p0826 for each different motor.

<table>
<thead>
<tr>
<th>p1784[0...n]</th>
<th>Motor model feedback scaling / MotMod fdbk scal</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td></td>
<td><strong>Calculated:</strong> CALC_MOD_CON</td>
</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>1000.0 [%]</td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the scaling for model fault feedback.

**Note:**

Feeding back the measured model fault to the model states increases the control stability and makes the motor model rugged against parameter errors.

When feedback is selected (p1784 > 0), Lh adaptation is not effective.

<table>
<thead>
<tr>
<th>p1785[0...n]</th>
<th>Motor model Lh adaptation Kp / MotMod Lh Kp</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td></td>
<td><strong>Calculated:</strong> CALC_MOD_CON</td>
</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>0.000</td>
</tr>
<tr>
<td>Max</td>
<td>10.000</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.100</td>
</tr>
</tbody>
</table>

**Description:**

Sets the proportional gain for the Lh adaptation of the motor model for an induction motor (ASM).

<table>
<thead>
<tr>
<th>p1786[0...n]</th>
<th>Motor model Lh adaptation integral time / MotMod Lh Tn</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td></td>
<td><strong>Calculated:</strong> CALC_MOD_CON</td>
</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>PEM, REL, FEM</td>
</tr>
<tr>
<td>Min</td>
<td>10 [ms]</td>
</tr>
<tr>
<td>Max</td>
<td>10000 [ms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100 [ms]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the integral time for the Lh adaptation of the motor model for an induction motor (ASM).
### Parameters

#### List of parameters

##### r1787[0...n]
**Motor model Lh adaptation corrective value** / **MotMod Lh corr**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td>Displays the corrective value for the Lh adaptation of the motor model for an induction motor (ASM).</td>
<td>The adaptation result is reset if the magnetizing inductance of the induction motor is changed (p0360, r0382). This also happens when changing over the data set if a different motor is not being used (p0826). The display of the inactive data sets is only updated when changing over the data set.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [mH]</td>
<td>- [mH] - [mH]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

##### r1791
**Motor model Lh adaptation power-on frequency** / **MotMod Lh f_on**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
<td>Displays the power-on stator frequency/ primary section frequency for the Lh adaptation for the induction motor (ASM).</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [Hz]</td>
<td>- [Hz] - [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

##### r1792
**Motor model Lh adaptation power-on slip** / **MotMod Lh fslip**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
<td>Displays the power-on slip frequency for the Lh adaptation for the induction motor (ASM).</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [Hz]</td>
<td>- [Hz] - [Hz]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

##### p1795[0...n]
**Motor model kT adaptation integral time** / **MotMod kT Tn**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: U, T Calculated: CALC_MOD_CON Access level: 3</td>
<td>Sets the integral time of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6731</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 [ms]</td>
<td>10000 [ms] 100 [ms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

##### r1797[0...n]
**Motor model kT adaptation corrective value** / **MotMod kT corr**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td>Displays the corrective value of the kT adaptation of the motor model for a permanent-magnet synchronous motor (PEM).</td>
<td>Refer to: p0826, p1780 The display of the inactive data sets is only updated when changing over the data set.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180 Func. diagram: 6731</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ASM, REL, FEM</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [Nm/A]</td>
<td>- [Nm/A] - [Nm/A]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### p1798[0...n] Motor model pulse technique speed adaptation Kp / MotMod pulses Kp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kp</td>
<td></td>
<td>Sets the proportional gain Kp for speed adaptation with active pulse technique for the estimation of the continuous rotor position.</td>
</tr>
</tbody>
</table>

#### Data type: FloatingPoint32
#### Dynamic index: DDS, p0180
#### Access level: 3

**Dependency:**
- The pulse frequency can, depending on the current controller sampling time (p0115[0]) assume the following values:
  - \( p_{1800} = \frac{1000}{p_{0115}[0] \times 2} \)
  - \( p_{1800} = \frac{n \times 1000}{p_{0115}[0]} \) with \( n = 1, 2, 3, \ldots \)

**Example:**
\( p_{0115}[0] = 250 \mu s \rightarrow p_{1800} = 2, 4, 8, 12, 16 \text{ kHz} \)

Possible setting values can be taken from r0114 (if \( p_{0009} = p_{0010} = 0 \)).

If \( p_{0092} = 1 \) the sampling times \( p_{0115} \) and the pulse frequency \( p_{1800} \) are checked every time the parameters are downloaded, and reset to the initial values if necessary. This check can be de-activated by setting \( p_{0092} = 0 \) (making this setting does not affect isochronous PROFIBUS operation).

If wobblulation is selected (p1810.2), the pulse frequency can only be changed as part of pulse enabling to values with the following ratio:
- a) \( p_{1800} \leq 1000 / p_{0115}[0] \) for \( p_{1811} > 0 \% \)
- b) \( p_{1800} \leq 1000 \times 2 / p_{0115}[0] \) for \( p_{1811} = 0 \% \)

**Effects:**
- switchover of the gating unit (p1810 bit 2)
- current actual value correction is activated (p1840 bit 0)
- minimum pulse frequency \( 1000 \times 0.5 / p_{0115}[0] \)
- maximum pulse frequency \( 1000 \times 2 / p_{0115}[0] \)
- fluctuating deadtimes and dynamic performance in the current control loop
- increased level of current ripple in the current display

### p1800[0...n] Pulse frequency setpoint / Pulse freq setp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kp</td>
<td></td>
<td>Sets the pulse frequency for the converter.</td>
</tr>
</tbody>
</table>

This parameter is pre-set to the rated converter value when the drive is first commissioned.

#### Data type: FloatingPoint32
#### Dynamic index: DDS, p0180
#### Access level: 2

**Dependency:**
- The pulse frequency can, depending on the current controller sampling time (p0115[0]) assume the following values:
  - \( p_{1800} = 1000 / (p_{0115}[0] \times 2) \)

or

\( p_{1800} = n \times 1000 / p_{0115}[0] \) with \( n = 1, 2, 3, \ldots \)

**Example:**
\( p_{0115}[0] = 250 \mu s \rightarrow p_{1800} = 2, 4, 8, 12, 16 \text{ kHz} \)

Possible setting values can be taken from r0114 (if \( p_{0009} = p_{0010} = 0 \)).

If \( p_{0092} = 1 \) the sampling times \( p_{0115} \) and the pulse frequency \( p_{1800} \) are checked every time the parameters are downloaded, and reset to the initial values if necessary. This check can be de-activated by setting \( p_{0092} = 0 \) (making this setting does not affect isochronous PROFIBUS operation).

If wobblulation is selected (p1810.2), the pulse frequency can only be changed as part of pulse enabling to values with the following ratio:
- a) \( p_{1800} \leq 1000 / p_{0115}[0] \) for \( p_{1811} > 0 \% \)
- b) \( p_{1800} \leq 1000 \times 2 / p_{0115}[0] \) for \( p_{1811} = 0 \% \)

**Effects:**
- switchover of the gating unit (p1810 bit 2)
- current actual value correction is activated (p1840 bit 0)
- minimum pulse frequency \( 1000 \times 0.5 / p_{0115}[0] \)
- maximum pulse frequency \( 1000 \times 2 / p_{0115}[0] \)
- fluctuating deadtimes and dynamic performance in the current control loop
- increased level of current ripple in the current display
Note: The maximum possible pulse frequency is also determined by the power unit being used. When the pulse frequency is increased, depending on the particular power unit, the maximum output current can be reduced (derating, refer to r0067).

The maximum pulse frequency for operation with output reactors (see p0230) is 4 kHz for booksize and blocksize power units, for chassis power units it is twice the rated pulse frequency (2.5 kHz or 4 kHz).

If a sine-wave filter is parameterized as output filter (p0230 = 3), then the pulse frequency cannot be set below the minimum value required for the filter. If an external sine-wave filter is parameterized, (p0230 = 4), then the minimum pulse frequency is calculated as follows:

\[ f_{\text{puls_min}} = \frac{1.6}{(2 \times \pi \times \sqrt{p0233 \times p0234 \times p0235})} \], with p0233 in H and p0234 in F.

In this case, the pulse frequency must be a multiple of the inverse value of the current controller sampling time (p0115[0]).

If a sine-wave filter is parameterized as output filter (p0230 = 3), then the pulse frequency cannot be changed below the minimum value required for the filter.

If p1800 is changed while commissioning (p0009, p0010 > 0), then it is possible that the old value will no longer be able to be set. The reason for this is that the dynamic limits of p1800 have been changed by a parameter that was set when the drive was commissioned (e.g. p1082).

<table>
<thead>
<tr>
<th>r1801[0...1]</th>
<th>CO: Pulse frequency / Pulse frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>- [kHz]</td>
<td>- [kHz]</td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the actual converter switching frequency.</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Actual</td>
</tr>
<tr>
<td></td>
<td>[1] = Modulator minimum value</td>
</tr>
<tr>
<td>Note:</td>
<td>The selected pulse frequency (p1800) may be reduced if the drive converter has an overload condition (p0290).</td>
</tr>
<tr>
<td></td>
<td>The following applies for vector drives (p0107):</td>
</tr>
<tr>
<td></td>
<td>The pulse frequency can also be reduced when changing over the modulator to an optimized pulse pattern. This is used to avoid overcontrol.</td>
</tr>
<tr>
<td></td>
<td>In the case of chassis power units, two-thirds of the setpoint pulse frequency is displayed in the FLB modulation range.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p1802[0...n]</th>
<th>Modulator mode / Modulator mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: CALC_MOD_LIM_REF</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td>P-Group: Modulation</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Factory setting: 0</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the modulator mode.</td>
</tr>
<tr>
<td>Value:</td>
<td>0: Automatic changeover SVM/FLB</td>
</tr>
<tr>
<td></td>
<td>1: Flat top modulation (FLB)</td>
</tr>
<tr>
<td></td>
<td>2: Space vector modulation (SVM)</td>
</tr>
<tr>
<td></td>
<td>3: SVM without overcontrol</td>
</tr>
<tr>
<td></td>
<td>4: SVM/FLB without overcontrol</td>
</tr>
<tr>
<td></td>
<td>5: SVM with pulse frequency reduction</td>
</tr>
<tr>
<td></td>
<td>6: SVM/FLB with pulse frequency reduction</td>
</tr>
<tr>
<td></td>
<td>7: No edge modulation up to 100 Hz</td>
</tr>
<tr>
<td></td>
<td>8: No edge modulation up to 60 Hz</td>
</tr>
<tr>
<td></td>
<td>9: Edge modulation</td>
</tr>
<tr>
<td>Dependency:</td>
<td>If a sine-wave filter is parameterized as output filter (p0230 = 3, 4), or if the power unit firmware is not able to calculate edge modulation (r0192.0 = 0), then only space vector modulation without overcontrol can be set as modulation type (p1802 = 3).</td>
</tr>
<tr>
<td></td>
<td>Refer to: r0192, p0230, p07003</td>
</tr>
</tbody>
</table>
**Notice:**
If the pulse patterns are enabled with overmodulation option (p1802 < 3) or edge modulation (p1802 > 6), then the current actual value correction is automatically activated (p1840.0 = 0).

**Note:**
When modulation modes are enabled that could lead to overmodulation (p1802 = 0, 1, 2, 5, 6), the modulation depth must be limited using p1803 (default p1803 < 100 %). The higher the overmodulation, the greater the current ripple and torque ripple.

When changing p1802[x], the values for all of the other existing indices are also changed.
p1802 ≠ 7, 8 should be used if the drive is operated below 100 Hz or 60 Hz, and it is necessary to avoid changing over to edge modulation. Above these output frequencies, the modulation depth remains limited so that there the full output voltage of the edge modulation is not reached.

### p1803[0...n]  
**Maximum modulation depth / Modulat depth max**

**Description:**
Defines the maximum modulation depth.

**Note:**
p1803 = 100% is the overcontrol limit for space vector modulation (for an ideal drive converter without any switching delay).

If an optimized pulse pattern is enabled (edge modulation), then the modulation depth is limited to below the output frequency of 28 Hz as there is no optimized pulse pattern in this range.

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_LIM_REF</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Modulation</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>20.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>150.0 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100.0 [%]</td>
</tr>
</tbody>
</table>

### p1804[0...n]  
**Filter time constant smoothed modulation index / T_filt mod_idxSmth**

**Description:**
Filter time constant for the smoothed modulation index to change over the modulator mode.

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Modulation</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [ms]</td>
</tr>
<tr>
<td>Max</td>
<td>10000.0 [ms]</td>
</tr>
</tbody>
</table>

| Factory setting | 10.0 [ms] |

### p1806[0...n]  
**Filter time constant Vdc correction / T_filt Vdc_corr**

**Description:**
Sets the filter time constant of the DC link voltage used to calculate the modulation depth.

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_REG</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Closed-loop control</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [ms]</td>
</tr>
<tr>
<td>Max</td>
<td>10000.0 [ms]</td>
</tr>
</tbody>
</table>

| Factory setting | 0.0 [ms] |

### r1807  
**Actual DC link voltage to calculate the modulation depth / VdcActValMod_depth**

**Description:**
DC link voltage that is used to convert the setpoint voltage into an equivalent modulation depth.
### List of parameters

#### r1808 DC link voltage actual value for \( U_{\text{max}} \) calculation / \( V_{\text{dc act val}} U_{\text{max}} \)

| Description: | DC link voltage used to determine the maximum possible output voltage. |

**VECTOR_G**

- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** - [V]
- **Max:** [V]
- **Value:** - [V]
- **Expert list:** 1

#### r1809 CO: Modulator mode actual / Modulator mode act

**VECTOR_G**

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** Modulation
- **Min:** 1
- **Max:** 9
- **Value:**
  1: Flat top modulation (FLB)
  2: Space vector modulation (SVM)
  3: Edge modulation from 28 Hz; 23:3
  4: Edge modulation from 28 Hz; 19:1
  5: Edge modulation from 60 Hz; 23:3
  6: Edge modulation from 60 Hz; 19:1
  7: Edge modulation from 100 Hz; 9:2
  8: Edge modulation from 100 Hz; 9:1
  9: Optimized pulse pattern
- **Expert list:** 1

#### p1810 Modulator configuration / Modulator config

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** Modulation
- **Value:**
  00: Avg value filter for \( U_{\text{lim}} \) (only for \( V_{\text{dc comp. in modulator}} \))
  01: DC link voltage compensation in the current control
  02: Wobbulation activated
  03: Current measurement oversampling selected
  08: Pulse frequency reduction (speed dependent) stage 1
  09: Pulse frequency reduction (speed dependent) stage 2
  10: Activate pulse-locking/pulse-dropping function
  12: Pulse freq. can be asynchronously set to curr. ctrl clock cycle
  13: Pulse freq. reduction before optimized pulse patterns for 500 µs
  14: Deactivate maximum angular difference adaptation
- **Expert list:**

**Dependency:** If bit 2 is set from 1 to 0, \( p1811 = 0 \) is set.
**Parameters**

**List of parameters**

**Notice:**
- Bit 1 = 0 can only be set under a pulse inhibit and for r0192.14 = 1.
- Bit 2 can only be set to 1 subject to the following prerequisites:
  - Pulse inhibit
  - r0192.16 = 1
  - p1800 < 2 x 1000/p0115[0]
- Bit 12 can only be changed subject to the following prerequisites:
  - preconditions, the same as bit 2 = 1
  - p1810.3 = 0

**Note:**
- Voltage limitation from the minimum of the DC link voltage (lower ripple in the output current, reduced output voltage).
- Re bit 00 = 1:
  - Voltage limitation from averaged DC link voltage (higher output voltage with increased ripple in the output current).
- The selection is only valid if the DC link compensation is not performed in the Control Unit (bit 1 = 0).
- Re bit 01 = 0:
  - DC link voltage compensation in the modulator.
- Re bit 01 = 1:
  - DC link voltage compensation in the current control.
- Re bit 02 = 0:
  - A gating unit that does not permit wobulation is used.
  - Edge modulation is not possible for a parallel connection with a single-winding system (p7003 = 0).
  - Bit 02 cannot be set to 0 if bit 12 = 1.
- Re bit 02 = 1:
  - A gating unit that permits wobulation is used.
  - For a wobulation amplitude p1811 = 0, the maximum possible pulse frequency in P1800 = 2 x 1000 / p0115[0].
  - For a wobulation amplitude p1811 > 0, the maximum possible pulse frequency in P1800 = 1000 / p0115[0].
  - If optimized pulse patterns has been activated (p1802 > 6), then a parameter save is required and switch-off and switch-on again. This is displayed using a fault message (F01040).
- Re bit 03 = 1:
  - The actual current value sensing and the determination of the valve ON times takes place with a double current controller clock cycle and phase offset.
  - The activation is only possible with r0192.23 = 1 and p1810.12 = 0 - and takes effect the next time the system is powered up.
- Re bit 08 = 1:
  - Above the frequency threshold r1836[0], the pulse frequency is switched to the value in p1800. Below r1836[0] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency (see r0114).
- Re bit 09 = 1:
  - Above the frequency threshold r1836[1], the pulse frequency is increased to the next possible value. Below r1836[1] (minus the hysteresis), the pulse frequency is reduced to the next possible pulse frequency.
  - If bit 8 is set to 0, bit 9 is automatically reset.
- Re bit 10 = 0:
  - Pulse-locking function activated.
- Re bit 10 = 1:
  - Pulse-dropping function activated.
- Re bit 12 = 0:
  - The pulse frequency p1800 can also be synchronously set to the current controller clock cycle (see r0114).
  - Bit 12 can only be set from 1 to 0 if the pulse frequency p1800 is set synchronously to the current controller clock cycle. In this case, the gating unit is not switched over.
- Re bit 12 = 1:
  - The pulse frequency p1800 can also be asynchronously set to the current controller clock cycle. In this case, the effects should be observed (see p1800).
  - If bit 12 is set to 1, then the gating unit is automatically switched over (p1810.2 = 1). If this is not possible (see above), then bit 12 cannot be set to 1.
  - Bit 12 cannot be set to 1, if p1810.3 = 1 is set.
p1811[0...n]  Pulse frequency wobbulation amplitude / Puls wobb ampl

**Description:**
Sets the amplitude of the statistical wobbulation signal. This signal is used to vary the pulse frequency to create a more pleasant sound.

**Note:**
p1811 > 0 is possible, if the following applies:
- configuration: p1810.2 = 1 (wobbulation activated)
- pulse frequency: p1800 <= 1000 / p115[0]
- output filter, filter type: p0230 < 3 (no sine-wave filter)

**Description:**
Sets the signal source to activate/de-activate offset calibration for output current measurement.

**Caution:**
The absence of offset calibration can have a negative effect on control properties. Offset calibration must be performed before switching on the power unit for the first time after POWER ON.

**Note:**
Offset calibration is only performed with pulses suppressed and can take up to one second.

p1815  Phase for PWM generation subgroup / Ph for PWM subgr

**Description:**
Sets bit 0 for recording the power unit in the subgroup for the "offset clocking".

**Dependency:**
Refer to: p1818, p1819

**Note:**
A change only becomes effective after booting.
If one of the following secondary conditions is not fulfilled, then none of the power units from the subgroup are clocked with an offset.

Secondary conditions for clocking with an offset:
- the PWM frequency (p1800[D]) of all power units in the subgroup must be the same.
- the PWM frequency (p1800[D]) must be the same in all drive data sets in the subgroup.
- the following must apply for the ratio between the PWM cycle (1/p1800[D]) and the current controller cycle (p0115[0]):
The ratio (1/p1800[D]) / (p0115[0]) must be an even integer number (2, 4, 6, ...) for all power units in the subgroup.

or
The ratio (p0115[0]) / (1/p1800[D]) must be an integer number (1, 2, 3, ...) for all power units in the subgroup.
### p1816
**Set phase for PWM generation manually / Set Ph for PWM**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Modulation</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>16</td>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets manual setting and overwriting of automatically determined phase shift for "offset clocking".

For p1816 = -1, the following applies:
Automatic mode. The phase shift value is automatically determined.

For p1816 = 0 ... 16, the following applies:
Manual mode. The user should define the phase shift value as follows:
1. PWM cycle (1/p1800) > current controller clock cycle (p0115[0])
The power unit executes a phase shift from Tshift = current controller cycle (p0115[0]) * p1816.
2. PWM cycle (1/p1800) <= current controller clock cycle (p0115[0])
For p1816 >= 1, the power unit executes a phase shift from Tshift = PWM cycle/2.

**Dependency:**
Refer to: r0116, p1800, p1819

### p1817
**Minimum ratio, pulse frequency to the output frequency / Min f_puls / f_max**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(2)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Converter</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>8.3</td>
<td>15.0</td>
<td>12.0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the minimum ratio between the pulse frequency and the output frequency.

**Notice:**
If the ratio between the pulse frequency and the output frequency is reduced, then oscillations can occur in the output current that can result in significant levels of current ripple with the appropriate negative effects.

**Note:**
When the maximum speed is changed, the pulse frequency p1800 is automatically limited to this minimum ratio. It is not permissible to reduce the pulse frequency if this would result in this ratio being undershot.

### p1818
**Phase for PWM generation configuration / Ph for PWM config**

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Modulation</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the phase shift for offset clocking.
For the first active power unit, it is specified whether clocking is to start at 0° (value = 0) or 180° (value = 1). All other active power units are clocked alternately according to the setting made here.

**Dependency:**
Refer to: p1819

**Note:**
A change only becomes effective after a POWER ON.
The parameter is not influenced by setting the factory setting.
**p1819 Phase for PWM generation / Ph for PWM**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Modulation</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-1</td>
<td>16</td>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0108, r0108, p0115, p1800, p1815, p1816, p1818

**Note:**
For reasons of compatibility, the parameter is an adjustable parameter. However, it functions solely as a display parameter. This means that factory setting -1 no longer has any significance and is only available for reasons of compatibility.

**p1820[0...n] Reverse the output phase sequence / Outp_ph_seq rev**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(3)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 6732</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p1821

**Caution:**
Changing the direction using p1820 or p1821 is not recognized by the "Safe Direction without encoder". As a consequence, the limit provided by SDI (Safe Direction) from r9733 no longer functions.

**Note:**
This setting can only be changed when the pulses are inhibited. p1821 can be used to reverse the phase sequence and encoder actual value.
## Description:
Setting to change the direction of rotation.
If the parameter is changed, it reverses the direction of rotation of the motor and the encoder actual value without changing the setpoint.

### Value:
- 0: CW
- 1: CCW

### Dependency:
Refer to: F07434

### Danger:
When using external speed actual values for the speed controller (see p1440), for a direction of rotation change (p1821 = 1), then its polarity must also be changed (e.g. for drive object ENCODER via p0410). Otherwise, a positive coupling can occur in the speed control loop and the drive would then be accelerated up to the speed limit.

### Caution:
- For 12-pulse converters with 30° offset angle for system 2, for a direction of rotation reversal, the phase offset changes by 60° as the sign of the angle offset changes. This can be adapted in p1810.15.
- Changing the direction using p1820 or p1821 is not recognized by the "Safe Direction without encoder". As a consequence, the limit provided by SDI (Safe Direction) from r9733 no longer functions.
- An appropriate fault is output for a drive data set changeover where the direction of rotation changes and the pulses are enabled.
- For operation with the phase sequence U/V/W, the direction of rotation is defined when viewing the face side of the motor output shaft.
- When changing the direction of rotation, the rotating field direction of the current controller is reversed. The speed actual value (e.g. r0063) is also reversed so that the control sense is kept and internally causing the direction of rotation to be reversed with the same setpoint. Further, the position actual values of the actual encoder are reversed (e.g. r0482[0...2]).
- p1820 can be used to reverse the direction of the motor without reversing the encoder actual value.

### Notice:
- The value is automatically calculated in the motor data identification routine.

### Note:
- The value is calculated in the motor data identification routine.

## p1825
### Converter valve threshold voltage / Threshold voltage

### Description:
Sets the threshold voltage drop of the valves (power semiconductor devices) to be compensated.

### Note:
The value is automatically calculated in the motor data identification routine.

## p1828
### Compensation valve lockout time phase U / Comp t_lock ph U

### Description:
Sets the valve lockout time to compensate for phase U.

### Notice:
The deadtime compensation is deactivated with p7003 = 2.
Note: The value is automatically calculated in the motor data identification routine.
For type PM340 power units, the value is limited to 3.98 µs.

**p1829**  
**Compensation valve lockout time phase V / Comp t_lock ph V**

**VECTOR_G**  
- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_ALL  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**Unit selection:** -

**P-Group:** Modulation  
**Units group:** -  
**Expert list:** 1

**Not for motor type:** -  
**Scaling:** -

**Min**  
0.00 [µs]  
1000000.00 [µs]

**Max**  
0.00 [µs]

**Factory setting**  
0.00 [µs]

**Description:** Sets the valve lockout time to compensate for phase V.

**Notice:** The deadtime compensation is deactivated with p7003 = 2.

**Note:** For type PM340 power units, the value is limited to 3.98 µs.

**p1830**  
**Compensation valve lockout time phase W / Comp t_lock ph W**

**VECTOR_G**  
- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_ALL  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**Unit selection:** -

**P-Group:** Modulation  
**Units group:** -  
**Expert list:** 1

**Not for motor type:** -  
**Scaling:** -

**Min**  
0.00 [µs]  
1000000.00 [µs]

**Max**  
0.00 [µs]

**Factory setting**  
0.00 [µs]

**Description:** Sets the valve lockout time to compensate for phase W.

**Notice:** The deadtime compensation is deactivated with p7003 = 2.

**Note:** For type PM340 power units, the value is limited to 3.98 µs.

**p1832**  
**Dead time compensation current level / t_dead_comp I_lev**

**VECTOR_G**  
- **Can be changed:** U, T  
- **Calculated:** CALC_MOD_ALL  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**Unit selection:** -

**P-Group:** Modulation  
**Units group:** -  
**Expert list:** 1

**Not for motor type:** -  
**Scaling:** -

**Min**  
0.0 [Arms]  
10000.0 [Arms]

**Max**  
10000.0 [Arms]

**Factory setting**  
0.0 [Arms]

**Description:** Sets the current level for the dead time compensation.
Above the current level, the dead time - resulting from the converter switching delays - is compensated by a previously calculated constant value. If the relevant phase current setpoint falls below the absolute value defined by p1832, the corrective value for this phase is continuously reduced.

**Dependency:** The factory setting of p1832 is automatically set to 0.02 * rated drive converter current (r0207).

**p1835[0...1]**  
**Pulse frequency reduction switchover frequency shift / f_puls_red f_sw**

**VECTOR_G (n/M)**  
- **Can be changed:** U, T  
- **Calculated:** -  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**Unit selection:** -

**P-Group:** Modulation  
**Units group:** -  
**Expert list:** 1

**Not for motor type:** REL, FEM  
**Scaling:** -

**Min**  
0.00 [Hz]  
800.00 [Hz]

**Max**  
800.00 [Hz]

**Factory setting**  
0.00 [Hz]

**Description:** Frequency to shift the switchover frequency r1836 for pulse frequency reduction.

The parameter value reduces the switchover frequency threshold with the same parameter index.

**Index:**
- [0] = Frequency limit 1
- [1] = Frequency limit 2

**Dependency:** Refer to: r1836
### r1836[0...1]

**Pulse frequency reduction, switchover frequency / f_puls_red f_sw**

**Description:**
Displays the frequency limits, under which the pulse frequency is automatically reduced.

Starting from the parameterized pulse frequency p1800, the pulse frequency is reduced to the next possible one, if the frequency limits and an additional hysteresis are fallen below.

- **Index 0:** Frequency limit for the first pulse frequency reduction (active for p1810.8 = 1)
- **Index 1:** Frequency limit for the second pulse frequency reduction (active for p1810.9 = 1)

**Dependency:**
Refer to: p1810, p1835

**Note:**
The pulse frequency reduction is not active for U/f control.

A minimum clearance of 10 Hz is kept between the frequency thresholds, which cannot be fallen below when changing p1835.

### r1837

**Gating unit configuration / Gating unit config**

**Description:**
Display for the configuration of the gating unit driver.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Modulation depth for a flying restart</td>
<td>Limited</td>
<td>Not limited</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Modulation depth for Vdc closed-loop control</td>
<td>Limited</td>
<td>Not limited</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Vdc min controller</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Motor data identification routine</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Current offset calculation</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Simulation mode</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Reverse the output phase sequence</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>CCW dir of rot</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Synchronization (bypass)</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>F07801 monitor by application</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Chassis Drive active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Short-circuit test active</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>FL modulation prohibited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>F3E present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>PS-ASIC3 available (PS-ASIC3+ is not a PS-ASIC3)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Power unit with PS interface</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Current measurement oversampling active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Actual value averaging temporarily suppressed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Modulation depth limiting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Reduced DC link capacitance (without F3E)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### p1840[0...n] Actual value correction configuration / ActVal_corr conf

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Actual value correction de-activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Compares the integrals from modulator and setpoint</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration of the actual value correction.

**Dependency:** Refer to: p1802

**Note:** During operation (pulses enabled) the configuration cannot be changed by changing over drive data sets.

### r1841 Actual value correction status word / ActVal_corr status

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Hardware for the actual value correction detected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Automatic shutdown (too many switching instants)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Integral scaled to half the gating unit clock cycle freq.</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Actual value correction temporarily suppressed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Actual value correction active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the status of actual value correction.

### p1845[0...n] Actual value correction evaluation factor Lsig / ActVal_cor ev Lsig

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00</td>
<td>10.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Description:** Sets the weighting factor for the leakage inductance of the L-R element of the actual value correction.

**Dependency:** Refer to: p0391, p0392, p0393

**Note:** The load-dependent adaptation of the leakage inductance of the current actual value correction is defined using p0391 ... p0393.
**p1846[0...n]**  
Actual value correction damping factor / ActV_corr D_factor

- **VECTOR_G**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Modulation
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:** 0.00
- **Max:** 10.00
- **Expert list:** 1
- **Access level:** 4
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Modulation
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:** 0.00
- **Max:** 10.00
- **Expert list:** 1
- **Access level:** 4

**Description:**
Sets the damping factor for the actual value correction.
The factor multiplies the T0/Tsig ratio in the feedback branch of the LR element.

---

**r1848[0...5]**  
Actual value correction phase currents / ActVal_corr I_ph

- **VECTOR_G**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Modulation
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Index:**
  - [0] = Harmonics, phase U
  - [1] = Harmonics, phase V
  - [2] = Harmonics, phase W
- **Min**
- **Max**
- **Factory setting**
- **Access level:** 4

**Description:**
Displays phase correction currents as well as the drive converter phase currents.

---

**r1849[0...5]**  
Actual value correction phase voltages / ActVal_corr U_ph

- **VECTOR_G**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Modulation
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Index:**
  - [0] = Harmonics, phase U
  - [1] = Harmonics, phase V
  - [2] = Harmonics, phase W
- **Min**
- **Max**
- **Factory setting**
- **Access level:** 4

**Description:**
Displays the phase correction voltages and the drive converter phase voltages.

---

**p1900**  
Motor data identification and rotating measurement / MotID and rot meas

- **VECTOR_G**
- **Can be changed:** C2(1), T
- **Data type:** Integer16
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Motor identification
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:** 0
- **Max:** 2
- **Expert list:** 1
- **Access level:** 1

**Description:**
Sets the motor data identification and speed controller optimization.

- **p1900 = 0:**
  - Function inhibited.
- **p1900 = 2:**
  - Induction motors --> set p1910 = 1 and p1960 = 0
  - Permanent-magnet or separately-excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0
When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next power-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately-excited synchronous motors, the encoder is adjusted with the next power-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.

**Value:**

0: Inhibited
2: Identify motor data at standstill

**Dependency:**

In the simulation mode, the parameter cannot be written into. When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1272, p1300, p1910
Refer to: F07990, A07991

**Notice:**

If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

It is not permissible to activate write protection during the motor identification (p7761).

**Note:**

The motor and control parameters are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating).

An appropriate alarm is output when the parameter is set.

The power-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it.

The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.

p1900 is automatically set to 0 after the motor data identification routine has been completed.

**Description:**

Sets the motor data identification and speed controller optimization.

The motor identification should first be performed with the motor stationary (p1900 = 1, 2; also refer to p1910). Based on this, additional motor and control parameters can be determined using the motor data identification with the motor rotating (p1900 = 1, 3; also refer to p1960).

p1900 = 0:
Function inhibited.

p1900 = 1:
Induction motors --> set p1910 = 1 and p1960 = 0, 1, 2 depending on p1300
Permanent-magnet or separately-excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0, 1, 2 depending on p1300

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next power-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately-excited synchronous motors, the encoder is adjusted with the next power-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.

With the following power-on command, a rotating motor data identification routine is carried out - and in addition, a speed controller optimization by making measurements at different motor speeds.

p1900 = 2:
Induction motors --> set p1910 = 1 and p1960 = 0
Permanent-magnet or separately-excited synchronous motors --> set p1910 = 1, p1990 = 1 and p1960 = 0

When the drive enable signals are present, a motor data identification routine is carried out at standstill with the next power-on command. Current flows through the motor which means that it can align itself by up to a quarter of a revolution.

For permanent-magnet or separately-excited synchronous motors, the encoder is adjusted with the next power-on command. The motor must be free to rotate and rotates through 1.5 revolutions of the motor encoder.
p1900 = 3:
Sets p1960 = 0, 1, 2 depending on p1300
This setting should only be selected if the motor data identification was already carried out at standstill.
When the drive enable signals are present, with the next power-on command, a rotating motor data identification routine is carried out - and in addition, speed controller optimization by taking measurements at different motor speeds.

Value:
0:  Inhibited
1:  Identify motor data at standstill and with motor rotating
2:  Identify motor data at standstill
3:  Identify motor data with motor rotating

Dependency:
In the simulation mode, the parameter cannot be written into. When selecting the motor data identification routine, the drive data set changeover is suppressed.
Refer to: p1272, p1300, p1910, p1960, p1990
Refer to: A07980, A07981, F07982, F07983, F07984, F07985, F07986, F07987, F07988, F07990, A07991

Notice:
If there is a motor holding brake, it must be open (p1215 = 2).
To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).
It is not permissible to activate write protection during the motor identification (p7761).

p1900 = 3:
This setting should only be selected if the motor data identification was already carried out at standstill.

Note:
The motor and control parameters are only optimally set when both measurements are carried out (initially at standstill, and then with the motor rotating).
An appropriate alarm is output when the parameter is set.
The power-on command must remain set during a measurement and after the measurement has been completed, the drive automatically resets it.
The duration of the measurements can lie between 0.3 s and several minutes. This time is, for example, influenced by the motor size and the mechanical conditions.
p1900 is automatically set to 0 after the motor data identification routine has been completed.

p1901  Test pulse evaluation configuration / Test puls config

Can be changed:  T
Calculated:  CALC_MOD_ALL
Access level:  2

Data type:  Unsigned32
Dynamic index:  -
Func. diagram:  -
P-Group:  Motor identification
Units group:  -
Unit selection:  -
Not for motor type:  -
Scaling:  -
Expert list:  1
Min  Max  Factory setting
-  -  0000 bin

Description:
Sets the configuration for the test pulse evaluation.

Bit 00: Check for conductor-to-conductor short circuit once/always when the pulses are enabled.
Bit 01: Check for ground fault once/always when the pulses are enabled.
Bit 02: Activation of the tests selected using bit 00 and/or bit 01 each time the pulses are enabled

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Phase short-circuit test pulse active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ground fault detection test pulse active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Test pulse at each pulse enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p0287

Note:
Re bit 02=0:
If the test was successful once after POWER ON (see r1902.0), it is not repeated.
Re bit 02=1:
The test is not only performed after POWER ON, but also each time the pulses are enabled.
If a conductor-to-conductor short-circuit is detected during the test, this is displayed in r1902.1.
If a ground fault is detected during the test, this is displayed in r1902.2.
r1902  Test pulse evaluation status / Test puls ev stat

Description:
Displays the status of the test pulse evaluation.

Short-circuit test:
Bit 0: The short-circuit test was executed without any fault.
Bit 1: A phase short circuit has been detected.
Bit 2: A ground fault test was successfully performed.
Bit 3: A ground fault was detected.
Bit 4: A test pulse longer than one sampling time has occurred

Note:
If the ground fault test was selected, but not successfully performed, then sufficient current will not be able to be established during the test pulse.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Short-circuit test executed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Phase short-circuit detected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Ground fault test successfully performed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Ground fault detected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Identification pulse width greater than the minimum pulse width</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

p1905  Parameter tuning selection / Par tune select

Description:
The fine encoder calibration (TUNE_ENC_FINE) should be started during the first commissioning or after the encoder is replaced.
The fine calibration starts when the pulses are enabled and performs a rotating measurement (approximately 1 minute). In this case, a setpoint speed of at least 40% of the motor rated speed must be entered, and the torque must be less than half of the motor rated torque.
The phases of the fine calibration of displayed using alarm A07976. The fine calibration ends with the calculation of p0431 for the following pulse inhibit. p1905 is automatically set to 0 at the end of the fine calibration.

Value:
0: Inactive
90: Encoder fine tuning

Dependency:
If the motor encoder adjustment has not been performed (p3925, bit 4 = 0) or the encoder calibration is activated (p1990 != 0), then encoder fine calibration is prevented.
Refer to: p1272, p1910, p1960, p1990
Refer to: A07976

Caution:
During encoder fine calibration, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

Notice:
For p1905 = 90 and with the pulses not enabled, the function is only executed the next time that the pulses are enabled. When selecting the encoder fine calibration, the changeover of the motor data sets is suppressed.
Parameters

List of parameters

### p1909[0...n]
Motor data identification control word / MotID STW

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Cl.-loop current control w/ dead-beat controller</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Leakage inductance estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Rotor time constant estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Rotor time constant estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Activates the identification dynamic leakage inductance</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Determine Tr and Lsig evaluation in the time range</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Activate vibration damping</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>De-activate vibration detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>De-activate pulse measurement Lq Ld</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>De-activate rotor resistance Rr measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>De-activate valve interlocking time measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Determine only stator resistance, valve voltage fault, dead time</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Short motor identification (lower quality)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the motor data identification.

**Note:**
The following applies to permanent-magnet synchronous motors:
Without de-selection in bit 11, in the closed-loop control mode, the direct inductance LD and the quadrature inductance Lq are measured at a low current.
When de-selecting with bit 11 or in the U/f mode, the stator inductance is measured at half the rated motor current.
If the stator inductance is not measured but is to be estimated, then bit 0 should be set and bit 11 should be de-selected.

### p1910
Motor data identification selection / MotID selection

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>26</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the motor data identification routine.
The motor data identification routine is carried out after the next power-on command.
p1910 = 1;
All motor data and the drive converter characteristics are identified and then transferred to the following parameters:
p0350, p0354, p0356, p0357, p0358, p0360, p1825, p1828, p1829, p1830
After this, the control parameter p0340 = 3 is automatically calculated.

**Value:**
0: Inhibited
1: Complete identification (ID) and acceptance of motor data
2: Complete identification (ID) of motor data without acceptance
List of parameters

20: Voltage vector input
21: Voltage vector input without filter
22: Rectangular voltage vector input without filter
23: Triangular voltage vector input without filter
24: Rectangular voltage vector input with filter
25: Triangular voltage vector input with filter
26: Enter voltage vector with DTC correction

Dependency:
"Quick commissioning" must be carried out (p0010 = 1) before executing the motor data identification routine!

In the simulation mode, the parameter cannot be written into. When selecting the motor data identification routine, the drive data set changeover is suppressed.

Refer to: p1272, p1900

Caution:
After the motor data identification (p1910 > 0) has been selected, alarm A07991 is output and a motor data identification routine is carried out as follows at the next power-on command:
- current flows through the motor and a voltage is present at the drive converter output terminals.
- during the identification routine, the motor shaft can rotate through a maximum of half a revolution.
- however, no torque is generated.

Notice:
If there is a motor holding brake, it must be open (p1215 = 2).
To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note:
When setting p1910, the following should be observed:
1. "With acceptance" means:
The parameters specified in the description are overwritten with the identified values and therefore have an influence on the controller setting.
2. "Without acceptance" means:
The identified parameters are only displayed in the range r1912 ... r1926. The controller settings remain unchanged.
3. p1910 = 3, 4, 5 can only be selected for induction motors.

**p1911**
Number of phases to be identified / Qty ph to ident

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
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<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the number of phases to be identified.

Value:
1: 1 phase U
2: 2 phases U, V
3: 3 phases U, V, W

Note:
When identifying with several phases, the accuracy increases and also the time it takes to make the measurement.

**r1912[0...2]**
Identified stator resistance / R_stator ident

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
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<td>Func. diagram: -</td>
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<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Displays the identified stator resistance.
Parameters

List of parameters

Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

r1913[0...2] Identified rotor time constant / T_rotor ident

VECTOR_G

Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Motor identification Units group: - Unit selection: -
Not for motor type: PEM Scaling: - Expert list: 1

Min - [ms] Max - [ms] Factory setting - [ms]

Description: Displays the identified rotor time constant.

Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

r1914[0...2] Identified total leakage inductance / L_total_leak ident

VECTOR_G

Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Motor identification Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min - [mH] Max - [mH] Factory setting - [mH]

Description: Displays the identified total leakage inductance.

Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

r1915[0...2] Identified nominal stator inductance / L_stator ident

VECTOR_G

Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Motor identification Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min - [mH] Max - [mH] Factory setting - [mH]

Description: Displays the nominal stator inductance identified.

Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W

r1916[0...2] Identified stator inductance 1 / L_stator 1 ident

VECTOR_G

Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Motor identification Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min - [mH] Max - [mH] Factory setting - [mH]

Description: Displays the nominal stator inductance identified for the 1st point of the saturation characteristic.

Index:

- [0] = Phase U
- [1] = Phase V
- [2] = Phase W
### List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Access level</th>
<th>P-Group</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1917[0...2]</td>
<td>Identified stator inductance 2 / L_stator 2 ident</td>
<td>[0] = Phase U</td>
<td>[1] = Phase V</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>Motor identification</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [mH]</td>
<td>- [mH]</td>
<td>- [mH]</td>
</tr>
<tr>
<td>r1918[0...2]</td>
<td>Identified stator inductance 3 / L_stator 3 ident</td>
<td>[0] = Phase U</td>
<td>[1] = Phase V</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>Motor identification</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [mH]</td>
<td>- [mH]</td>
<td>- [mH]</td>
</tr>
<tr>
<td>r1919[0...2]</td>
<td>Identified stator inductance 4 / L_stator 4 ident</td>
<td>[0] = Phase U</td>
<td>[1] = Phase V</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>Motor identification</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [mH]</td>
<td>- [mH]</td>
<td>- [mH]</td>
</tr>
<tr>
<td>r1920[0...2]</td>
<td>Identified dynamic leakage inductance / L_leak dyn ident</td>
<td>[0] = Phase U</td>
<td>[1] = Phase V</td>
<td>FloatingPoint32</td>
<td>4</td>
<td>Motor identification</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [mH]</td>
<td>- [mH]</td>
<td>- [mH]</td>
</tr>
</tbody>
</table>

Description:
- Displays the nominal stator inductance identified for the 2nd point of the saturation characteristic.
- Displays the nominal stator inductance identified for the 3rd point of the saturation characteristic.
- Displays the nominal stator inductance identified for the 4th point of the saturation characteristic.
- Displays the identified dynamic total leakage inductance.
### Parameters

#### List of parameters

**r1921[0...2]**  
**Identified dynamic leakage inductance 1 / L\_leak 1 dyn id**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Motor identification  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** - [mH]  
**Max** - [mH]  
**Factory setting** - [mH]  

**Description:** Displays the identified dynamic leakage inductance 1.  
**Index:**  
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

**r1922[0...2]**  
**Identified dynamic leakage inductance 2 / L\_leak 2 dyn id**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Motor identification  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** - [mH]  
**Max** - [mH]  
**Factory setting** - [mH]  

**Description:** Displays the identified dynamic leakage inductance 2.  
**Index:**  
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

**r1923[0...2]**  
**Identified dynamic leakage inductance 3 / L\_leak 3 dyn id**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Motor identification  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** - [mH]  
**Max** - [mH]  
**Factory setting** - [mH]  

**Description:** Displays the identified dynamic leakage inductance 3.  
**Index:**  
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

**r1924[0...2]**  
**Identified dynamic leakage inductance 4 / L\_leak 4 dyn id**  
**VECTOR\_G**  
**Can be changed:** -  
**Calculated:** -  
**Access level:** 4  
**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Motor identification  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min** - [mH]  
**Max** - [mH]  
**Factory setting** - [mH]  

**Description:** Displays the identified dynamic leakage inductance 4.  
**Index:**  
[0] = Phase U  
[1] = Phase V  
[2] = Phase W
### List of parameters

#### r1925[0...2] Identified threshold voltage / U_threshold_ident
- **VECTOR_G**
  - Can be changed: -
  - Calculated: -
  - Access level: 4
- **Data type:** FloatingPoint32
  - Dynamic index: -
  - Func. diagram: -
- **P-Group:** Motor identification
  - Units group: -
  - Unit selection: -
- **Not for motor type:** -
  - Scaling: -
  - Expert list: 1
- **Min**
  - [Vrms]
  - Factory setting
- **Max**
  - [Vrms]

**Description:**
Displays the identified IGBT threshold voltage.

**Index:**
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

#### r1926[0...2] Identified effective valve lockout time / t_lock_valve_id
- **VECTOR_G**
  - Can be changed: -
  - Calculated: -
  - Access level: 4
- **Data type:** FloatingPoint32
  - Dynamic index: -
  - Func. diagram: -
- **P-Group:** Motor identification
  - Units group: -
  - Unit selection: -
- **Not for motor type:** -
  - Scaling: -
  - Expert list: 1
- **Min**
  - [µs]
  - Factory setting
- **Max**
  - [µs]

**Description:**
Displays the identified effective valve lockout time.

**Index:**
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

#### r1927[0...2] Identified rotor resistance / R_rotor_ident
- **VECTOR_G**
  - Can be changed: -
  - Calculated: -
  - Access level: 4
- **Data type:** FloatingPoint32
  - Dynamic index: -
  - Func. diagram: -
- **P-Group:** Motor identification
  - Units group: -
  - Unit selection: -
- **Not for motor type:** -
  - Scaling: -
  - Expert list: 1
- **Min**
  - [ohm]
  - Factory setting
- **Max**
  - [ohm]

**Description:**
Displays identified rotor resistance (on separately excited synchronous motors: damping resistance).

**Index:**
[0] = Phase U  
[1] = Phase V  
[2] = Phase W

#### r1929[0...2] Identified cable resistance / R_cable_ident
- **VECTOR_G**
  - Can be changed: -
  - Calculated: -
  - Access level: 4
- **Data type:** FloatingPoint32
  - Dynamic index: -
  - Func. diagram: -
- **P-Group:** Motor identification
  - Units group: -
  - Unit selection: -
- **Not for motor type:** -
  - Scaling: -
  - Expert list: 1
- **Min**
  - [ohm]
  - Factory setting
- **Max**
  - [ohm]

**Description:**
Displays the identified cable resistance.

**Index:**
[0] = Phase U  
[1] = Phase V  
[2] = Phase W
**r1934[0...9]**  
q inductance identified / Lq ident  
VECTOR_G (n/M)  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -  
P-Group: Motor identification  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min [-mH]  
Max [-mH]  
Factory setting [-mH]  
Description: Displays the identified (differential) q-inductance.  
Dependency: Refer to: r1935, p1959, p1960  
Note: The Lq characteristic consists of the value pairs from p1934 and p1935 with the same index.  
This value corresponds to the value of the total leakage inductance (r0377).

**r1935[0...9]**  
q inductance identification current / Lq I_ident  
VECTOR_G (n/M)  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -  
P-Group: Motor identification  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min [-Arms]  
Max [-Arms]  
Factory setting [-Arms]  
Description: Displays the identification current to identify the q inductance ([0...9]).  
Dependency: Refer to: r1934, p1959, p1960  
Note: The Lq characteristic consists of the value pairs from r1934 and r1935 with the same index.

**p1959[0...n]**  
Rotating measurement configuration / Rot meas config  
VECTOR_G (n/M)  
Can be changed: T  
Calculated: CALC_MOD_ALL  
Access level: 2  
Data type: Unsigned16  
Dynamic index: DDS, p0180  
Unit selection: -  
P-Group: Motor identification  
Units group: -  
Unit selection: -  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min -  
Max -  
Factory setting 0000 0000 0001 1111 bin  
Bit field: Bit Signal name 1 signal 0 signal FP  
00 Enc test active Yes No -  
01 Saturation characteristic identification Yes No -  
02 Moment of inertia identification Yes No -  
03 Re-calculates the speed controller parame-

ters Yes No -  
04 Speed controller optimization (vibration test) Yes No -  
05 q leakage inductance ident. (for current con-

troller adaptation) Yes No -  
12 Measurement shortened Yes No -  
Description: Sets the configuration of the rotating measurement.  
Dependency: Refer to: F07988  
Note: The encoder is only tested if the rotating measurement with encoder is selected (p1960 = 2).  
The following parameters are influenced for the individual optimization steps:  
Bit 00: None  
Bit 01: p0320, p0360, p0362 ... p0369  
Bit 02: p0341, p0342  
Bit 03: p1400.0, p1458, p1459, p1460, p1462, p1463, p1470, p1472, p1496  
Bit 04: Dependent on p1960  
Bit 05: p0391, p0392, p0393, p1402.2 only for induction motors  
p1960 = 1, 3: p1400.0, p1458, p1459, p1470, p1472, p1496
The identification of the \(q\) leakage inductance can only be carried out for unloaded motors or motors with a low load (load approx. 30% below the rated motor torque). Only then is a current controller adaptation (p0391 ... p0393) parameterized if the \(q\)-leakage inductance under no-load conditions is at least 30% higher than the total leakage inductance (p0356, p0358).

Re bit 12 = 1:

The selection only has an effect on the measurement p1960 = 1, 2. For the shortened measurement, the magnetizing current and moment of inertia are determined with a somewhat lower accuracy.

### p1960 Rotating measurement selection / Rot meas sel

**VECTOR_G**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Integer16
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Motor identification
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** REL
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0
- **Max:** 4
- **Factory setting:** 0

**Description:**

Sets the rotating measurement.

The rotating measurement is carried out after the next power-on command.

The setting possibilities of the parameter depend on the open-loop/closed-loop control mode (p1300).

- **p1300 < 20 (U/f open-loop control):** It is not possible to select rotating measurement or speed controller optimization.
- **p1300 = 20, 22 (encoderless operation):** Only rotating measurement or speed controller optimization can be selected in the encoderless mode.
- **p1300 = 21, 23 (operation with encoder):** Both versions (encoderless and with encoder) of the rotating measurement and speed controller optimization can be selected.

**Value:**

- 0: Inhibited
- 1: Rotating measurement in encoderless operation
- 2: Rotating measurement with encoder
- 3: Speed controller optimization in encoderless operation
- 4: Speed controller optimization with encoder

**Dependency:**

Before the rotating measurement is carried out, the motor data identification routine (p1900, p1910, r3925) should have already been done.

In the simulation mode, a value of 1 cannot be written into the parameter.

When selecting the rotating measurement, the drive data set changeover is suppressed.

Refer to: p1272, p1300, p1900, p1959

Refer to: A07987

**Danger:**

For drives with a mechanical system that limits the distance moved, it must be ensured that this is not reached during the rotating measurement. If this is not the case, then it is not permissible that the measurement is carried out.

**Notice:**

If there is a motor holding brake, it must be open (p1215 = 2).

To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

**Note:**

When the rotating measurement is activated, it is not possible to save the parameters (p0971, p0977).

Parameter changes are automatically made for the rotating measurement (e.g. p1120); this is the reason that up to the end of the measurement, and if no faults are present, no manual changes should be made.

The ramp-up and ramp-down times (p1120, p1121) are limited, for the rotating measurement, to 900 s.

For speed controller optimization with encoder (p1960 = 2, 4), the speed controller for encoderless operation is also pre-assigned (p1470, p1472).

Depending on whether the speed controller optimization is carried out with or without encoder, different \(K_{p}/T_{n}\) adaptations of the speed controller are set (p1464, p1465). If the drive should be controlled with as well as without speed encoder, then we recommend the use of two drive data sets (p0180). These can then be executed with different speed controller adaptations.
### p1961 Saturation characteristic speed to determine / Sat_char n determ

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>26 [%]</td>
<td>75 [%]</td>
<td>40 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the speed to determine the saturation characteristic and the encoder test. The percentage value is referred to p0310 (rated motor frequency).

**Dependency:**
- Refer to: p0310, p1959
- Refer to: F07983

**Note:**
The saturation characteristics should be determined at an operating point with the lowest possible load.

### r1962[0...4] Saturation characteristic magnetizing current / Sat_char I_mag

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the magnetizing currents of the identified saturation characteristic. The values are referred to r0331. After they have been determined, the values are transferred to p0366 ... p0369.

**Index:**
- [0] = Value 1
- [1] = Value 2
- [2] = Value 3
- [3] = Value 4
- [4] = Value 5

**Dependency:**
- Refer to: r0331

### r1963[0...4] Saturation characteristic magnetizing inductance / Sat_char L_main

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: PEM, REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the magnetizing inductances of the identified saturation characteristic. The values are referred to r0382.

**Index:**
- [0] = Value 1
- [1] = Value 2
- [2] = Value 3
- [3] = Value 4
- [4] = Value 5

**Dependency:**
- Refer to: r0382
### r1964[0...4] Saturation characteristic rotor flux / Sat_char rot flux

**VECTOR_G (n/M)**
- Can be changed: -
- Calculated: -
- Access level: 4

- Data type: FloatingPoint32
- Dynamic index: -
- Func. diagram: -

- P-Group: Motor identification
- Units group: -
- Unit selection: -

- Not for motor type: PEM, REL
- Scaling: -
- Expert list: 1

- Min - [%]
- Max - [%]
- Factory setting

**Description:**
Displays the rotor flux values of the identified saturation characteristic.
After they have been determined, the values are transferred to p0362 ... p0365.

**Index:**
- [0] = Value 1
- [1] = Value 2
- [2] = Value 3
- [3] = Value 4
- [4] = Value 5

### p1965 Speed_ctrl_opt speed / n_opt speed

**VECTOR_G (n/M)**
- Can be changed: U, T
- Calculated: -
- Access level: 3

- Data type: FloatingPoint32
- Dynamic index: -
- Func. diagram: -

- P-Group: Motor identification
- Units group: -
- Unit selection: -

- Not for motor type: REL
- Scaling: -
- Expert list: 1

- Min 10 [%]
- Max 75 [%] 40 [%]

**Description:**
Sets the speed for the identification of the moment of inertia and the vibration test.

- Induction motor:
The percentage value is referred to p0310 (rated motor frequency).
- Synchronous motor:
The percentage value is referred to the minimum from p0310 (rated motor frequency) and p1082 (maximum speed).

**Dependency:**
- Refer to: p0310, p1959
- Refer to: F07984, F07985

**Note:**
In order to calculate the inertia, sudden speed changes are carried out - the specified value corresponds to the lower speed setpoint. This value is increased by 20 % for the upper speed value. The q leakage inductance (refer to p1959 bit 5) is determined at zero speed and at 50% of p1965 - however, with a maximum output frequency of 15 Hz and at a minimum of 10% of the rated motor speed.

### p1967 Speed_ctrl_opt dynamic factor / n_opt dyn_factor

**VECTOR_G (n/M)**
- Can be changed: U, T
- Calculated: CALC_MOD_ALL
- Access level: 3

- Data type: FloatingPoint32
- Dynamic index: -
- Func. diagram: -

- P-Group: Motor identification
- Units group: -
- Unit selection: -

- Not for motor type: REL
- Scaling: -
- Expert list: 1

- Min 1 [%]
- Max 400 [%] 100 [%]

**Description:**
Sets the dynamic response factor for speed controller optimization.

**Dependency:**
- Refer to: p1959
- Refer to: F07985

**Note:**
For a rotating measurement, this parameter can be used to optimize the speed controller.
p1967 = 100 % --> speed controller optimization according to a symmetric optimum.
p1967 > 100 % --> optimization with a higher dynamic response (Kp higher, Tn lower).
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1968</td>
<td>Speed_ctrl_opt dynamic factor actual / n_opt dyn_fact act</td>
<td>Displays the dynamic factor which is actually achieved for the vibration test</td>
<td>This dynamic factor only refers to the control mode of the speed controller set in p1960.</td>
</tr>
<tr>
<td>r1969</td>
<td>Speed_ctrl_opt moment of inertia determined / n_opt M_inert det</td>
<td>Displays the determined moment of inertia of the drive. After it has been determined, the value is transferred to p0341, p0342.</td>
<td></td>
</tr>
<tr>
<td>r1970[0...1]</td>
<td>Speed_ctrl_opt vibration test vibration frequency determined / n_opt f_vibration</td>
<td>Displays the vibration frequencies determined by the vibration test.</td>
<td></td>
</tr>
<tr>
<td>r1971[0...1]</td>
<td>Speed_ctrl_opt vibration test standard deviation determined / n_opt std. deviat.</td>
<td>Displays the standard deviations of the vibration frequencies determined by the vibration test</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r1972[0...1]
**Speed_ctrl_opt vibration test number of periods determined / n_opt period qty**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the period number determined by the vibration test.

**Index:**
- [0] = No. of periods of the low frequency
- [1] = No. of periods of the high frequency

**Dependency:**
Refer to: p1959
Refer to: F07985

#### r1973
**Rotating measurement, encoder test pulse number determined / n_opt pulse No.**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the number of pulses determined during the vibration test.

**Note:**
A negative signal indicates an incorrect polarity of the encoder signal.

#### r1979.0...11
**BO: Speed_ctrl_opt status / n_opt status**

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the status to check and monitor the states of speed controller optimization.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Speed controller optimization activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Speed controller optimization completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Speed controller optimization interrupted</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Enc test active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Saturation char. identification active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Moment of inertia identification active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Recalc. speed controller parameters active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Speed controller vibration test active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Magnetizing inductance adapt. active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Operation with encoder after encoderless</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Operation</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>q-leakage inductance identification active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p1980[0...n]
**PolID technique / PolID technique**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: MDS, p0130</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>ASM</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the pole position identification technique.
**Parameters**

**List of parameters**

**Value:**

1: Voltage pulsing 1st harmonics  
4: Voltage pulsing 2-stage  
6: Voltage pulsing 2-stage inverse  
10: DC current injection

**Dependency:**

In the simulation mode, the parameter cannot be written into.

Refer to: p1272, p1780

**Note:**

Voltage pulse technique (p1980 = 1, 4, 6) cannot be applied to separately-excited synchronous motors (p0300 = 5) and for operation with sine-wave output filters (p0230).

<table>
<thead>
<tr>
<th>p1982[0...n]</th>
<th>PolID selection / PolID selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>MDS, p0130</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>2</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**

Activates the pole position identification routine to determine the commutation angle and to carry out a plausibility check.

**Value:**

0: Pole position identification off  
1: Pole position identification for commutation  
2: Pole position identification for plausibility check

**Recommend.:**

Re p1982 = 1:  
This is used for synchronous motors with motor encoder without absolute data.  
The information/data regarding the absolute commutation angle is supplied via a track C/D, Hall sensors, an absolute encoder or from the pole position identification routine.  
Re p1982 = 2:  
This is used for synchronous motor with motor encoder with absolute data to check this data.  
For VECTOR, the following applies:  
With p1982 = 2, each time the pulses are enabled it is checked whether the absolute position supplied from the encoder does not exceed a deviation of 45 degrees to the identified pole wheel position.  
With separately-excited synchronous motors (p0300 = 5), pole position identification cannot be selected if an encoder with position data is used (e.g. SSI encoder).

**Dependency:**

Refer to: p0325, p0329, p1980, r1984, r1985, r1987, r1990

**Note:**

For encoderless operation, the pole position identification routine is selected with p1780.6

<table>
<thead>
<tr>
<th>r1984</th>
<th>PolID angular difference / PolID ang diff</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (n/M)</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Motor identification</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>- ['']</td>
</tr>
<tr>
<td>Max</td>
<td>- ['']</td>
</tr>
</tbody>
</table>

**Description:**

Displays the angular difference between the actual electrical commutation angle and the angle determined by the pole position identification.

**Dependency:**


**Note:**

PolID: Pole position identification  
When the pole position identification routine is executed several times using p1983, the spread of the measured values can be determined using this value. At the same position, the spread should be less than 2 degrees electrical.
### r1985 PolID saturation curve / PolID sat_char

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>- [Arms]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>- [Arms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the saturation characteristic of the pole position identification routine (saturation technique).
Displays the current characteristic of the pole position identification routine (elasticity technique).

**Dependency:**

**Note:**
PolID: Pole position identification

Regarding the saturation technique:
The values for the characteristic of the last saturation-based pole position identification routine are output every 1 ms in order to record signals (e.g. trace).

### r1987 PolID trigger characteristic / PolID trig_char

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>- [%]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>- [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the trigger characteristic of the pole position identification routine.
The values for the characteristic of the last pole position identification routine are output every 1 ms in order to record signals (e.g. trace).
The values for trigger characteristic and saturation characteristic are always output in synchronism from a time perspective.

**Dependency:**

**Note:**
PolID: Pole position identification

The following information and data can be taken from the trigger characteristic.
- the value -100% marks the angle at the start of the measurement.
- the value +100 % marks the commutation angle determined from the pole position identification routine.

### p1990 Encoder adjustment, determine angular commutation offset / Enc_adj det ang

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor identification</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>ASM</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
This function is only required for synchronous motors and can be started when commissioning for the first time or after replacing an encoder. The function acts on the active motor data set.
Alarm A07971 is output while the angular commutation offset is being determined, p1990 is automatically set to 0 after the angular commutation offset has been determined.

For p1990 = 1 (encoder adjustment with transfer), the following applies:
The angular commutation offset is determined and transferred into p0431.

For p1990 = 2 (encoder adjustment for checking), the following applies:
The angular commutation offset is determined and is not transferred into p0431. For a deviation of more than 6° electrical, fault F07413 is output.

For p1990 = 3 (encoder adjustment in operation), the following applies:
PolID procedure runs before the zero mark detection. The angular commutation offset is determined and transferred into p0431. A fine adjustment (p1905) is then optionally possible.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>De-activated</td>
</tr>
<tr>
<td>1:</td>
<td>Activated with transfer</td>
</tr>
<tr>
<td>2:</td>
<td>Activated for checking</td>
</tr>
<tr>
<td>3:</td>
<td>Activates encoder adjustment in operation</td>
</tr>
</tbody>
</table>

**Dependency:**
- In the simulation mode, the parameter cannot be written into.
- When selecting the encoder adjustment, the changeover of the drive data sets is suppressed.
- Encoder adjustment is only carried out if the function module for "speed/torque control" is activated (r0108.2 = 1).
- Refer to: p0325, p0329, p0431, p1272, p1900

**Caution:**
- When the encoder is being adjusted, the motor must be operated without a load - and if a motor holding brake is being used, this must be opened.

<table>
<thead>
<tr>
<th>p1991[0...n] Motor changeover, angular commutation correction / Ang_com corr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> T</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>-180 [']</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the angle that is added to the commutating angle.
- If the angular correction is not correctly set, when changing over and with closed-loop torque control, the motor can accelerate to high speeds in spite of the fact that a setpoint of zero has been entered.

<table>
<thead>
<tr>
<th>p1999[0...n] Ang. commutation offset calibr. and PollID scaling / Com_ang_offs scal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Closed-loop control</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>10 [%]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the scaling for the runtime of the automatic encoder calibration and of the pole position identification technique in which the current is injected.
- Refer to: p0341, p0342

**Caution:**
- For p1999 > 100 % (setting large moments of inertia) the following applies:
  - There is no locked rotor monitoring (F07970 fault value 2).
  - The plausibility check of the encoder signal (F07970 fault value 4) only checks the sign.

**Note:**
- For high moments of inertia, it is practical to scale the runtime of the calibration higher.

<table>
<thead>
<tr>
<th>p2000 Reference frequency / f_ref</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> T</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Communications</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>0.10 [Hz]</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the reference quantity for the frequency.
- All frequencies specified as relative value are referred to this reference quantity.
- The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
- The following applies: Reference frequency (in Hz)
### List of parameters

**p2000 Reference speed reference frequency / n Ref f Ref**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>ENC</td>
<td>T</td>
<td>Sets the reference quantity for speed and frequency. All speeds or frequencies specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
<td>If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Communications  
**Not for motor type:** -  
**Min:** 6.00 [rpm]  
**Max:** 210000.00 [rpm]  
**Factory setting:** 3000.00 [rpm]  

**p2000 Reference velocity, reference frequency / v Ref f Ref**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC (Lin_enc)</td>
<td>ENC (Lin_enc)</td>
<td>T</td>
<td>Sets the reference quantity for velocity and frequency. All velocities or frequencies specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). The following applies: Reference frequency (in Hz) = reference velocity (in (m/min) / 60)</td>
<td>If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Communications  
**Not for motor type:** -  
**Min:** 0.60 [m/min]  
**Max:** 600.00 [m/min]  
**Factory setting:** 120.00 [m/min]  

**p2000 Reference speed reference frequency / n Ref f Ref**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
</table>
| VECTOR_G | VECTOR_G | T | Sets the reference quantity for speed and frequency. All speeds or frequencies specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). The following applies: Reference frequency (in Hz) = reference speed (in ((rpm) / 60) x pole pair number) | Refer to: p2001, p2002, p2003, r2004  
For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1. If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor. Example 1: The signal of an analog input (e.g. r4055[0]) is connected to a speed setpoint (e.g. p1070[0]). The actual percentage input value is cyclically converted into the absolute speed setpoint using the reference speed (p2000). Example 2: The setpoint from PROFIBUS (r2050[1]) is connected to a speed setpoint (e.g. p1070[0]). The actual input value is cyclically converted into a percentage value via the pre-specified scaling 4000 hex. This percentage value is converted to the absolute speed setpoint via reference speed (p2000). |

**Data type:** FloatingPoint32  
**P-Group:** Communications  
**Not for motor type:** -  
**Min:** 6.00 [rpm]  
**Max:** 210000.00 [rpm]  
**Factory setting:** 3000.00 [rpm]  

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
**Description:**
Sets the reference quantity for voltages.
All voltages specified as relative value are referred to this reference quantity. This also applies for direct voltage values (= rms value) like the DC-link voltage.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Note:**
This reference quantity also applies to direct voltage values. It is not interpreted as rms value, but as DC voltage value.

**Note:**
For the automatic calculation \((p0340 = 1, p3900 > 0)\) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using \(p0573 = 1\).
If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
For infeed units, the parameterized device supply voltage \((p0210)\) is pre-assigned as the reference quantity.

**Example:**
The actual value of the DC link voltage \((r0070)\) is connected to a test socket (e.g. \(p0771[0]\)). The actual voltage value is cyclically converted into a percentage of the reference voltage \((p2001)\) and output according to the parameterized scaling.

---

**Description:**
Sets the reference quantity for currents.
All currents specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Notice:**
If various DDS are used with different motor data, then the reference quantities remain the same as these are not changed over with the DDS. The resulting conversion factor should be taken into account (e.g. for trace records).

**Example:**
\(p2002 = 100 \text{ A}\) 
Reference quantity 100 A corresponds to 100 %
\(p0305[0] = 100 \text{ A}\) 
Rated motor current 100 A for MDS0 in DDS0 --> 100 % corresponds to 100 % of the rated motor current
\(p0305[1] = 50 \text{ A}\) 
Rated motor current 50 A for MDS1 in DDS1 --> 100 % corresponds to 200 % of the rated motor current

**Note:**
For the automatic calculation \((p0340 = 1, p3900 > 0)\) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using \(p0573 = 1\).
If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
For infeed units, the rated line current, which is obtained from the rated power and parameterized rated line supply voltage \((p2002 = r0206 / p0210 / 1.73)\) is pre-assigned as the reference quantity.

**Example:**
The actual value of a phase current \((r0069[0])\) is connected to a test socket (e.g. \(p0771[0]\)). The actual current value is cyclically converted into a percentage of the reference current \((p2002)\) and output according to the parameterized scaling.
**p2003 Reference torque / M_ref**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>CALC_MOD_ALL</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Units group:</td>
<td>7_2</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.01 [Nm]</td>
</tr>
<tr>
<td>Max</td>
<td>20000000.00 [Nm]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>1.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the reference quantity for torque.

All torques specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Note:**
- For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.
- If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.

**Example:**
The actual value of the total torque (r0079) is connected to a test socket (e.g. p0771[0]). The actual torque is cyclically converted into a percentage of the reference torque (p2003) and output according to the parameterized scaling.

**p2004 Reference power / P_ref**

**B_INF, VECTOR_G**

| Can be changed: | - |
| Calculated: | - |
| Access level: | 3 |
| Data type: | FloatingPoint32 |
| Dynamic index: | - |
| P-Group: | Communications |
| Units group: | 14_10 |
| Not for motor type: | - |
| Scaling: | - |
| Min | - [kW] |
| Max | - [kW] |
| Factory setting | - [kW] |

**Description:**
Displays the reference quantity for power.

All power ratings specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Dependency:**
This value is calculated as follows:
- Infeed: Calculated from voltage times current.
- Closed-loop control: Calculated from torque times speed.

**Note:**
- If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
- The reference power is calculated as follows:
  - 2 * Pi * reference speed / 60 * reference torque (motor)
  - reference voltage * reference current * root(3) (infeed)

**p2005 Reference angle / Reference angle**

**VECTOR_G**

| Can be changed: | T |
| Calculated: | CALC_MOD_ALL |
| Access level: | 3 |
| Data type: | FloatingPoint32 |
| Dynamic index: | - |
| P-Group: | Communications |
| Units group: | - |
| Not for motor type: | - |
| Scaling: | - |
| Min | 90.00 [*] |
| Max | 180.00 [*] |
| Factory setting | 90.00 [*] |

**Description:**
Sets the reference quantity for angle.

All angles specified as relative value are referred to this reference quantity.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Note:**
- For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1.
- If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
Parameters
List of parameters

p2006  Reference temp / Ref temp

- **Can be changed:** T
- **Data type:** FloatingPoint32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 50.00 [°C]
- **Max:** 300.00 [°C]

**Description:**
Sets the reference quantity for temperature.
All temperatures specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

p2007  Reference acceleration / a_ref

- **Can be changed:** T
- **Data type:** FloatingPoint32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 0.01 [rev/s²]
- **Max:** 500000.00 [rev/s²]

**Description:**
Sets the reference quantity for acceleration rates.
All acceleration rates specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Note:**
For the automatic calculation (p0340 = 1, p3900 > 0) an appropriate pre-assignment is only made if the parameter is not inhibited from being overwritten using p0573 = 1. If a BICO interconnection is established between different physical quantities, then the particular reference quantities are used as internal conversion factor.
The reference acceleration is calculated as follows:
Reference speed (p2000) converted from 1/min to 1/s divided by 1 s
--> p2007 = p2000 [rpm] / (60 [s/min] * 1 [s])

r2019[0...7]  Comm int error statistics / Comm err

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Displays the receive errors at the commissioning interface (RS232).

**Index:**
[0] = Number of error-free telegrams
[1] = Number of rejected telegrams
[2] = Number of framing errors
[3] = Number of overrun errors
[4] = Number of parity errors
[5] = Number of starting character errors
[6] = Number of checksum errors
[7] = Number of length errors

p2020  Field bus interface baud rate / Field bus baud

- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 4
- **Max:** 13

**Description:**
Sets the baud rate for the fieldbus interface USS.
Value:

4: 2400 baud
5: 4800 baud
6: 9600 baud
7: 19200 baud
8: 38400 baud
9: 57600 baud
10: 76800 baud
11: 93750 baud
12: 115200 baud
13: 187500 baud

Note:

Fieldbus IF: Fieldbus interface
Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.
The parameter is set to the factory setting when the protocol is reselected.

Description:
Displays or sets the address for the fieldbus interface USS.
The address can be set as follows:
1) Using the address switch on the Control Unit.
   --> p2021 displays the address setting.
   --> A change only becomes effective after a POWER ON.
2) Using p2021
   --> Only if an address of 0 or an address which is invalid for the fieldbus selected in p2030 has been set using the
      address switch.
   --> The address is saved in a non-volatile fashion using the function "copy from RAM to ROM".
   --> A change only becomes effective after a POWER ON.

Dependency:
Refer to: p2030

Note:
Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.
The parameter is set to the factory setting when the protocol is reselected.

Description:
Sets the number of 16-bit words in the PZD part of the USS telegram for the field bus interface.

Dependency:
Refer to: p2030

Note:
The parameter is not influenced by setting the factory setting.
**p2023 Field bus int USS PKW no. / Field bus USS PKW**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0: PKW 0 words</td>
<td>Sets the number of 16-bit words in the PKW part of the USS telegram for the field bus interface.</td>
</tr>
<tr>
<td></td>
<td>3: PKW 3 words</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: PKW 4 words</td>
<td></td>
</tr>
<tr>
<td></td>
<td>127: PKW variable</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2030

**Note:** The parameter is not influenced by setting the factory setting.

**r2029[0...7] Field bus int error statistics / Field bus error**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 = Number of error-free telegrams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = Number of rejected telegrams</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 = Number of framing errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 = Number of overrun errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 = Number of parity errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 = Number of starting character errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6 = Number of checksum errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7 = Number of length errors</td>
<td></td>
</tr>
</tbody>
</table>

**p2030 Field bus int protocol selection / Field bus protocol**

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3: PROFIBUS</td>
<td>Sets the communication protocol for the field bus interface.</td>
</tr>
<tr>
<td></td>
<td>6: USS(RS232)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Changes only become effective after POWER ON.

**r2032 Master control, control word effective / PcCtrl STW eff**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 = Number of error-free telegrams</td>
<td>Displays the effective control word 1 (STW1) of the drive for the master control.</td>
</tr>
</tbody>
</table>

**p2030 Field bus int protocol selection / Field bus protocol**

<table>
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<th>Value</th>
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<tr>
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<td>6: USS(RS232)</td>
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</table>

**Note:** Changes only become effective after POWER ON.

**r2032 Master control, control word effective / PcCtrl STW eff**

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<th>Description</th>
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</tr>
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**p2030 Field bus int protocol selection / Field bus protocol**

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<th>Value</th>
<th>Description</th>
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<tr>
<td></td>
<td>6: USS(RS232)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Changes only become effective after POWER ON.

**r2032 Master control, control word effective / PcCtrl STW eff**

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<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0 = Number of error-free telegrams</td>
<td>Displays the effective control word 1 (STW1) of the drive for the master control.</td>
</tr>
</tbody>
</table>
### Bit field: Bit Signal name 1 signal 0 signal FP
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notice:**
The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

**Note:**
OC: Operating condition

### r2032 Master control, control word effective / PcCtrl STW eff

**VECTOR_G**

**Can be changed:** -
**Calculated:** -
**Access level:** 2

**Data type:** Unsigned16
**Dynamic index:** -
**Func. diagram:** -

**P-Group:** Displays, signals
**Units group:** -
**Unit selection:** -

**Not for motor type:** -
**Scaling:** -
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the effective control word 1 (STW1) of the drive for the master control.

### Bit field: Bit Signal name 1 signal 0 signal FP
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>01</td>
<td>OC / OFF2</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>02</td>
<td>OC / OFF3</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>04</td>
<td>Ramp-function generator enable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>05</td>
<td>Start ramp-function generator</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>06</td>
<td>Speed setpoint enable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>08</td>
<td>Jog bit 0</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>09</td>
<td>Jog bit 1</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Master ctrl by PLC</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

**Notice:**
The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.

**Note:**
OC: Operating condition

### p2035 Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no

**CU_G130_DP, CU_G150_DP**

**Can be changed:** U, T
**Calculated:** -
**Access level:** 2

**Data type:** Integer16
**Dynamic index:** -
**Func. diagram:** -

**P-Group:** Communications
**Units group:** -
**Unit selection:** -

**Not for motor type:** -
**Scaling:** -
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1-62</td>
</tr>
</tbody>
</table>

**Description:**
Sets the drive object number for communication via the field bus interface (USS).

**Dependency:**
Refer to: p0978

**Note:**
p2035 defines the destination for USS parameter requests (PIV).
p0978[0] defines the destination for USS process data (PZD).
The parameter is available globally on all drive objects.
The parameter is not influenced by setting the factory setting.
### p2037

**IF1 PROFIdrive STW1.10 = 0 mode / IF1 PD STW1.10=0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, ENC, VECTOR_G</td>
<td>Sets the processing mode for PROFIdrive STW1.10 &quot;master control by PLC&quot;.</td>
<td></td>
<td></td>
<td>If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 &quot;master control by PLC&quot;), then p2037 should be set to 2.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Value:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>0: Freeze setpoints and continue to process sign-of-life</td>
<td>Do not change the setting p2037 = 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>1: Freeze setpoints and sign-of-life</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Do not freeze setpoints</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p2038

**IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Sets the interface mode of the PROFIdrive control words and status words.</td>
<td></td>
<td></td>
<td>For p0922 (p2079) = 100 ... 199, p2038 is automatically set to 1 and p2038 can no longer be changed. This means that for these telegrams, the &quot;SIMODRIVE 611 universal&quot; interface mode is set and cannot be changed.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>When selecting a telegram via p0922 (p2079), this parameter influences the device-specific assignment of the bits in the control and status words.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Value:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>0: SINAMICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>1: SIMODRIVE 611 universal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: VIK-NAMUR</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p2039

**Select debug monitor interface / Debug monit select**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Sets the serial interface for the debug monitor. The serial interface for the debug monitor is COM1 (X140) or COM2 (internal).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Value = 0: COM2 (internal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Value = 1: COM1 (X140), commissioning protocol is de-activated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Value = 2: COM2 (internal)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>Value = 3: Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

**p2040**  
Fieldbus interface monitoring time / Fieldbus t_monit  
CU_G130_DP, CU_G150_DP  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Communications  
Not for motor type: -  
Min: 0 [ms]  
Max: 1999999 [ms]  
Factory setting: 100 [ms]  
Access level: 3  
Dependency: Refer to: F01910  
Note: 0: The monitoring is de-activated.

**Description:**
Sets the monitoring time to monitor the process data received via the fieldbus interface. If no process data is received within this time, an appropriate message is output.

**Note:**
Every change only becomes effective after a POWER ON.

**Value:**
- SINAMICS
- VIK-NAMUR

### p2042  
PROFIBUS Ident Number / PB Ident No.  
CU_G130_DP, CU_G150_DP  
Can be changed: T  
Data type: Integer16  
P-Group: Communications  
Not for motor type: -  
Min: 0  
Max: 1  
Factory setting: 0  
Access level: 3  
Dependency: Refer to: F01910  
Note: Sets the PROFIBUS Ident Number (PNO-ID). SINAMICS can be operated with various identities on PROFIBUS. This allows the use of a PROFIBUS GSD that is independent of the device (e.g. PROFIdrive VIK-NAMUR with Ident Number 3AA0 hex).

**Value:**
- 0: SINAMICS
- 1: VIK-NAMUR

### r2043.0...2  
BO: IF1 PROFIdrive PZD state / IF1 PD PZD state  
CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN  
Can be changed: -  
Data type: Unsigned8  
P-Group: Communications  
Not for motor type: -  
Min: -  
Access level: 3  
Dependency: Refer to: p2044  
Note: Displays the PROFIdrive PZD state. When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

### p2044  
IF1 PROFIdrive fault delay / IF1 PD fault delay  
B_INF, ENC, VECTOR_G  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: Communications  
Not for motor type: -  
Min: 0 [s]  
Max: 100 [s]  
Factory setting: 0 [s]  
Access level: 3  
Dependency: Refer to: F01910  
Note: Sets the delay time to initiate fault F01910 after a setpoint failure. The time until the fault is initiated can be used by the application. This means that is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).
Parameters

List of parameters

Dependency:
Refer to: r2043
Refer to: F01910

p2045  CI: PB/PN clock synchronous controller sign-of-life signal source / PB/PN ctrSol_S_src

ENC, VECTOR_G (n/M)

Can be changed: T  Calculated: -  Access level: 3
Data type: Unsigned32 / Integer16  Dynamic index: -  Func. diagram: 2410
P-Group: Communications  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
-  -  0

Description:
Connector input for the sign-of-life of the clock synchronous PROFIBUS/PROFINET controller.
The sign-of-life is expected at bits 12 to 15. Bits 0 to 11 are not evaluated.
The sign-of-life signal is normally received in PZD4 (control word 2) from the controller.

Dependency:
Refer to: p0925, r2065

Notice:
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

p2047  PROFIBUS additional monitoring time / PB suppl t_monit

CU_G130_DP, CU_G150_DP

Can be changed: U, T  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 2410
P-Group: Communications  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
0 [ms] 20000 [ms] 0 [ms]

Description:
Sets the additional monitoring time to monitor the process data received via PROFIBUS.
The additional monitoring time enables short bus faults to be compensated.
If no process data is received within this time, an appropriate message is output.

Recommend:
Do not set the additional monitoring time for clock-synchronous operation.

Dependency:
Refer to: F01910

Note:
For controller STOP, the additional monitoring time is not effective.

p2048  IF1 PROFIdrive PZD sampling time / IF1 PZD t_sample

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN

Can be changed: C1(3)  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dynamic index: -  Func. diagram: -
P-Group: Communications  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
1.00 [ms] 16.00 [ms] 4.00 [ms]

Description:
Sets the sampling time for the cyclic interface 1 (IF1).

Note:
The system only permits certain sampling times and after writing to this parameter, displays the value that has actually been set.
For clock cycle synchronous operation, the specified bus cycle time applies (Tdp).

r2050[0...9]  CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

B_INF

Can be changed: -  Calculated: -  Access level: 3
Data type: Integer16  Dynamic index: -  Func. diagram: -
P-Group: Communications  Units group: -  Unit selection: -
Not for motor type: -  Scaling: 4000H  Expert list: 1
Min  Max  Factory setting
-  -  -

Description:
Connector output to interconnect PZD (setpoints) with word format received from the PROFIdrive controller.

Index:
[0] = PZD 1
[1] = PZD 2
Parameters

List of parameters

[2] = PZD 3
[3] = PZD 4
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note: IF1: Interface 1

---

**r2050[0...19]**

**CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP</td>
<td>Can be changed: -</td>
<td>-</td>
<td>Connector output to interconnect PZD (setpoints) with word format received from the PROFIdrive controller.</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Dynamic index: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Unit group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Scaling: 4000H</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Expert list: 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[4] = PZD 5</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[5] = PZD 6</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[6] = PZD 7</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[7] = PZD 8</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[8] = PZD 9</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[9] = PZD 10</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[10] = PZD 11</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[11] = PZD 12</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[12] = PZD 13</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[13] = PZD 14</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[14] = PZD 15</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[15] = PZD 16</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[16] = PZD 17</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[17] = PZD 18</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[18] = PZD 19</td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>[19] = PZD 20</td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** IF1: Interface 1

---

**r2050[0...3]**

**CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC</td>
<td>Can be changed: -</td>
<td>-</td>
<td>Connector output to interconnect PZD (setpoints) with word format received from the PROFIdrive controller.</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Scaling: 4000H</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Expert list: 1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:** Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

**Note:** IF1: Interface 1
### r2050[0...4] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

<table>
<thead>
<tr>
<th>Description</th>
<th>Connector output to interconnect PZD (setpoints) with word format received from the PROFIdrive controller.</th>
</tr>
</thead>
</table>
| Index       | [0] = PZD 1
|             | [1] = PZD 2
|             | [2] = PZD 3
|             | [3] = PZD 4

#### Data type
- Integer16

#### P-Group
- Communications

#### Not for motor type
- -

#### Min
- -

#### Max
- -

#### Factory setting
- -

<table>
<thead>
<tr>
<th>Expert list</th>
<th>1</th>
</tr>
</thead>
</table>

#### Min Max Factory setting
- - -

#### Can be changed: -

#### Calculated: -

#### Access level: 3

### r2050[0...31] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

<table>
<thead>
<tr>
<th>Description</th>
<th>Connector output to interconnect PZD (setpoints) with word format received from the PROFIdrive controller.</th>
</tr>
</thead>
</table>
| Index       | [0] = PZD 1
|             | [1] = PZD 2
|             | [2] = PZD 3
|             | [3] = PZD 4
|             | [5] = PZD 6
|             | [6] = PZD 7
|             | [7] = PZD 8
|             | [8] = PZD 9
|             | [9] = PZD 10
|             | [10] = PZD 11
|             | [12] = PZD 13
|             | [13] = PZD 14
|             | [14] = PZD 15
|             | [15] = PZD 16
|             | [16] = PZD 17
|             | [17] = PZD 18
|             | [18] = PZD 19
|             | [19] = PZD 20
|             | [20] = PZD 21
|             | [21] = PZD 22
|             | [22] = PZD 23
|             | [23] = PZD 24
|             | [24] = PZD 25
|             | [25] = PZD 26
|             | [26] = PZD 27
|             | [27] = PZD 28
|             | [28] = PZD 29
|             | [29] = PZD 30
|             | [30] = PZD 31
|             | [31] = PZD 32

#### Data type
- Integer16

#### P-Group
- Communications

#### Not for motor type
- -

#### Min
- -

#### Max
- -

#### Factory setting
- -

<table>
<thead>
<tr>
<th>Expert list</th>
<th>1</th>
</tr>
</thead>
</table>

#### Min Max Factory setting
- - -

#### Can be changed: -

#### Calculated: -

#### Access level: 3

#### Func. diagram: 2440, 2468

#### Dependent on:
Refer to: r2060
Notice:
Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.
A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

Note:
IF1: Interface 1

### p2051[0...9]
#### Parameter: p2051[0...9]
**Description:**
Selects the PZD (actual values) with word format to be sent to the PROFIdrive controller.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10

**Note:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
IF1: Interface 1

### p2051[0...24]
#### Parameter: p2051[0...24]
**Description:**
Selects the PZD (actual values) with word format to be sent to the PROFIdrive controller.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20
- [20] = PZD 21
- [21] = PZD 22
- [22] = PZD 23
Parameters
List of parameters

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: IF1: Interface 1

**p2051[0...11]**  CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2470</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: 4000H</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Selects the PZD (actual values) with word format to be sent to the PROFIdrive controller.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11

Dependency: Refer to: p2061

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: IF1: Interface 1

**p2051[0...4]**  CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

<table>
<thead>
<tr>
<th>TB30, TM150, TM31</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: 4000H</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Selects the PZD (actual values) with word format to be sent to the PROFIdrive controller.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
Note: IF1: Interface 1

**p2051[0...31]**  CI: IF1 PROFIdrive PZD send word / IF1 PZD send word

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2470</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: 4000H</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Selects the PZD (actual values) with word format to be sent to the PROFIdrive controller.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
Parameters

List of parameters

[3] = PZD 4
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency:
Refer to: p2061

Notice: The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

**r2053[0...9]**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the PZD (actual values) with word format sent to the PROFIdrive controller.

Index: Displays the PZD (actual values) with word format sent to the PROFIdrive controller.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
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<td>-</td>
</tr>
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<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<td>-</td>
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<td>15</td>
<td>Bit 15</td>
<td>ON</td>
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<td>-</td>
</tr>
</tbody>
</table>

---

**Note:** IF1: Interface 1

**r2053[0...24]** IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- **Data type**: Unsigned16
- **P-Group**: Communications
- **Not for motor type**: -
- **Min**: -
- **Max**: -
- **Expert list**: 1

**Can be changed**: -

**Dynamic index**: -

**Unit selection**: -

**Func. diagram**: -

**Access level**: 3

**Description**: Displays the PZD (actual values) with word format sent to the PROFIdrive controller.

**Index**: 0 = PZD 1 1 = PZD 2 2 = PZD 3 3 = PZD 4 4 = PZD 5 5 = PZD 6 6 = PZD 7 7 = PZD 8 8 = PZD 9 9 = PZD 10 10 = PZD 11 11 = PZD 12 12 = PZD 13 13 = PZD 14 14 = PZD 15 15 = PZD 16 16 = PZD 17 17 = PZD 18 18 = PZD 19 19 = PZD 20 20 = PZD 21 21 = PZD 22 22 = PZD 23 23 = PZD 24 24 = PZD 25

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
**Note:** IF1: Interface 1

### r2053[0...11] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

**ENC**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** 2450, 2470

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

- - -

**Description:** Displays the PZD (actual values) with word format sent to the PROFIdrive controller.

**Index:**
- [0] = PZD 1  
- [1] = PZD 2  
- [2] = PZD 3  
- [3] = PZD 4  
- [4] = PZD 5  
- [5] = PZD 6  
- [6] = PZD 7  
- [7] = PZD 8  
- [8] = PZD 9  
- [9] = PZD 10  
- [10] = PZD 11  

**Dependency:** Refer to: p2051, p2061

**Note:** IF1: Interface 1

### r2053[0...4] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

**TB30, TM150, TM31**
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

- - -

**Description:** Displays the PZD (actual values) with word format sent to the PROFIdrive controller.

**Index:**
- [0] = PZD 1  
- [1] = PZD 2  
- [2] = PZD 3  
- [3] = PZD 4  
- [4] = PZD 5
### Bit field: Bit Signal name 1 signal 0 signal FP

| 00 | Bit 0 | ON | OFF | - |
| 01 | Bit 1 | ON | OFF | - |
| 02 | Bit 2 | ON | OFF | - |
| 03 | Bit 3 | ON | OFF | - |
| 04 | Bit 4 | ON | OFF | - |
| 05 | Bit 5 | ON | OFF | - |
| 06 | Bit 6 | ON | OFF | - |
| 07 | Bit 7 | ON | OFF | - |
| 08 | Bit 8 | ON | OFF | - |
| 09 | Bit 9 | ON | OFF | - |
| 10 | Bit 10 | ON | OFF | - |
| 11 | Bit 11 | ON | OFF | - |
| 12 | Bit 12 | ON | OFF | - |
| 13 | Bit 13 | ON | OFF | - |
| 14 | Bit 14 | ON | OFF | - |
| 15 | Bit 15 | ON | OFF | - |

**Note:** IF1: Interface 1

<table>
<thead>
<tr>
<th>r2053[0...31]</th>
<th>IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the PZD (actual values) with word format sent to the PROFIdrive controller.

**Index:**

| [0] = PZD 1 |
| [1] = PZD 2 |
| [2] = PZD 3 |
| [3] = PZD 4 |
| [5] = PZD 6 |
| [6] = PZD 7 |
| [7] = PZD 8 |
| [8] = PZD 9 |
| [9] = PZD 10 |
| [10] = PZD 11 |
| [12] = PZD 13 |
| [13] = PZD 14 |
| [14] = PZD 15 |
| [15] = PZD 16 |
| [16] = PZD 17 |
| [17] = PZD 18 |
| [18] = PZD 19 |
| [19] = PZD 20 |
| [20] = PZD 21 |
| [21] = PZD 22 |
| [22] = PZD 23 |
| [23] = PZD 24 |
| [24] = PZD 25 |
| [25] = PZD 26 |
| [26] = PZD 27 |
| [27] = PZD 28 |
| [28] = PZD 29 |
| [29] = PZD 30 |
| [30] = PZD 31 |
| [31] = PZD 32 |
### Dependency:
Refer to: p2051, p2061

**Note:** IF1: Interface 1

#### r2054  PROFIBUS status / PB status

**CU_G130_DP, CU_G150_DP**

Can be changed: -  
Calculated: -  
Access level: 3

Data type: Integer16  
Dynamic index: -  
Func. diagram: 2410

P-Group: Communications  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min Max Factory setting
0 4 -

**Description:** Status display for the PROFIBUS interface.

**Value:**
0: OFF  
1: No connection (search for baud rate)  
2: Connection OK (baud rate found)  
3: Cyclic connection with master (data exchange)  
4: Cyclic data OK

**Note:** Re r2054 = 3:

In state 3 (the LED flashes green), a cyclic connection has been established to the PROFIBUS master; however, one of the following prerequisites is missing for cyclic operation:

- No setpoints are being received as the PROFIBUS master is in the STOP condition.
- The drive is not in synchronism as the global control (GC) has an error.

Re r2054 = 4:

In the status 4 (LED green), the cyclic connection to the PROFIBUS master has been established and setpoints are being received. The clock cycle synchronization is OK, the global control (GC) is error-free.

This state does not provide any statement regarding the quality of the clock cycle synchronous sign-of-life characters on the drive objects.

#### r2055[0...2]  PROFIBUS diagnostics standard / PB diag standard

**CU_G130_DP, CU_G150_DP**

Can be changed: -  
Calculated: -  
Access level: 3

Data type: Unsigned16  
Dynamic index: -  
Func. diagram: 2410

P-Group: Communications  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min Max Factory setting
- - -

**Description:** Diagnostics display for the PROFIBUS interface.

**Index:**
[0] = Master bus address  
[1] = Master input total length bytes  
[2] = Master output total length bytes
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2057</strong></td>
<td>PROFIBUS address switch diagnostics / PB addr_sw diag</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G150_DP</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: - Func. diagram: 2410</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
</tbody>
</table>

**Dependency:**
Displays the setting of the PROFIBUS address switch "DP ADDRESS" on the Control Unit.

**Notice:**
Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

**Note:**
IF1: Interface 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2060[0...2]</strong></td>
<td>CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW</td>
</tr>
<tr>
<td>ENC</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer32</td>
<td>Dynamic index: - Func. diagram: 2440, 2468</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: 4000H Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r2050

**Notice:**
Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

**Note:**
IF1: Interface 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2060[0...30]</strong></td>
<td>CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW</td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer32</td>
<td>Dynamic index: - Func. diagram: 2440, 2468</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: 4000H Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r2050

**Notice:**
Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

**Note:**
IF1: Interface 1
List of parameters

Dependency: Refer to: r2050

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.

A BICO interconnection for a single PZD can only take place either on r2050 or r2060.

A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1

p2061[0...10] CI: IF1 PROFIdrive PZD send double word / IF1 PZD send DW

ENC

Can be changed: U, T  Calculated: -  Access level: 3

Data type: Unsigned32 / Integer32  Dynamic index: -  Func. diagram: 2470

P-Group: Communications  Units group: -  Unit selection: -

Not for motor type: -  Scaling: 4000H  Expert list: 1

Min Max  Factory setting
- -  0

Description: Selects the PZD (actual values) with double word format to be sent to the PROFIdrive controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on r2051 or r2061.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

p2061[0...30] CI: IF1 PROFIdrive PZD send double word / IF1 PZD send DW

VECTOR_G

Can be changed: U, T  Calculated: -  Access level: 3

Data type: Unsigned32 / Integer32  Dynamic index: -  Func. diagram: 2470

P-Group: Communications  Units group: -  Unit selection: -

Not for motor type: -  Scaling: 4000H  Expert list: 1

Min Max  Factory setting
- -  0

Description: Selects the PZD (actual values) with double word format to be sent to the PROFIdrive controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
Parameters

List of parameters

[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
[15] = PZD 16 + 17
[16] = PZD 17 + 18
[17] = PZD 18 + 19
[18] = PZD 19 + 20
[19] = PZD 20 + 21
[20] = PZD 21 + 22
[21] = PZD 22 + 23
[22] = PZD 23 + 24
[23] = PZD 24 + 25
[24] = PZD 25 + 26
[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency:
Refer to: p2051

Notice:
A BICO interconnection for a single PZD can only take place either on r2051 or r2061.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note:
IF1: Interface 1

r2063[0...10] IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW

ENC
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: 2450, 2470
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description:
Displays the PZD (actual values) with double word format sent to the PROFIdrive controller.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Bit field: Bit Signal name 1 signal 0 signal FP
00 Bit 0 ON OFF -
01 Bit 1 ON OFF -
02 Bit 2 ON OFF -
03 Bit 3 ON OFF -
04 Bit 4 ON OFF -
05 Bit 5 ON OFF -
06 Bit 6 ON OFF -
07 Bit 7 ON OFF -
08 Bit 8 ON OFF -
09 Bit 9 ON OFF -
10 Bit 10 ON OFF -
List of parameters

Parameters

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Notice:
A maximum of 4 indices of the "trace" function can be used.

Note:
IF1: Interface 1

\[ r2063[0...30] \]

**IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW**

**VECTOR_G**

Can be changed: -
Calculated: -
Access level: 3

Data type: Unsigned32
Dynamic index: -
Func. diagram: 2450, 2470

P-Group: Communications
Units group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min -
Max -
Factory setting -

Description:
Displays the PZD (actual values) with double word format sent to the PROFIdrive controller.

Index:

- [0] = PZD 1 + 2
- [1] = PZD 2 + 3
- [2] = PZD 3 + 4
- [3] = PZD 4 + 5
- [4] = PZD 5 + 6
- [5] = PZD 6 + 7
- [6] = PZD 7 + 8
- [7] = PZD 8 + 9
- [8] = PZD 9 + 10
- [9] = PZD 10 + 11
- [10] = PZD 11 + 12
- [12] = PZD 13 + 14
- [13] = PZD 14 + 15
- [14] = PZD 15 + 16
- [15] = PZD 16 + 17
- [16] = PZD 17 + 18
- [17] = PZD 18 + 19
- [18] = PZD 19 + 20
- [19] = PZD 20 + 21
- [20] = PZD 21 + 22
- [21] = PZD 22 + 23
- [22] = PZD 23 + 24
- [23] = PZD 24 + 25
- [24] = PZD 25 + 26
- [25] = PZD 26 + 27
- [26] = PZD 27 + 28
- [27] = PZD 28 + 29
- [28] = PZD 29 + 30
**Parameters**

**List of parameters**

- **[29]** = PZD 30 + 31
- **[30]** = PZD 31 + 32

### Bit field

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
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</tr>
<tr>
<td>25</td>
<td>Bit 25</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Bit 26</td>
<td>ON</td>
<td>OFF</td>
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<td>27</td>
<td>Bit 27</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>28</td>
<td>Bit 28</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
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<td>29</td>
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<tr>
<td>30</td>
<td>Bit 30</td>
<td>ON</td>
<td>OFF</td>
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<tr>
<td>31</td>
<td>Bit 31</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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</table>

### Notice:

A maximum of 4 indices of the "trace" function can be used.

### Note:

IF1: Interface 1

---

**r2064[0...7]**

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
</table>

PB/PN diagnostics clock cycle synchronism / PB/PN diag clock

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Integer32
- **Dynamic index:** -
- **Func. diagram:** 2410
- **P-Group:** Communications
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

### Min

- **Max**

**Factory setting**

### Description:

Displays the last parameter received from the PROFIBUS/PROFINET controller for clock synchronism.

The parameters for clock synchronism are created when configuring the bus and are transferred at the start of cyclic operation from the controller to the device.

### Index:

- **[0]** = Clock synchronous mode activated
- **[1]** = Bus cycle time (Tdp) [µs]
- **[2]** = Master cycle time (Tmapc) [µs]
- **[3]** = Instant of actual value acquisition (Ti) [µs]
- **[4]** = Instant of setpoint acquisition (To) [µs]
- **[5]** = Data exchange interval (Tdx) [µs]
- **[6]** = PLL window (Tpll-w) [1/12 µs]
- **[7]** = PLL delay time (Tpll-d) [1/12 µs]
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2065</strong></td>
<td>PB/PN controller sign of life diagnostics / PB/PN ctr SoL diag</td>
</tr>
<tr>
<td>ENC, VECTOR_G (nM)</td>
<td>Displays how often the sign-of-life from the clock synchronous PROFIBUS/PROFINET controller last failed. An appropriate fault is output when the tolerance, specified in p0925, is exceeded.</td>
</tr>
<tr>
<td><strong>r2067[0...1]</strong></td>
<td>IF1 PZD maximum interconnected / IF1 PZDmaxIntercon</td>
</tr>
<tr>
<td><strong>r2074[0...9]</strong></td>
<td>IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv</td>
</tr>
<tr>
<td>B_INF</td>
<td>Displays the PROFIBUS address of the sender from which the process data (PZD) is received.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Values</th>
</tr>
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<tbody>
<tr>
<td><strong>r2065</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>ENC, VECTOR_G (nM)</td>
<td>Data type: Unsigned16 Dynamic index: - Func. diagram: 2410</td>
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<tr>
<td><strong>r2067[0...1]</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>r2074[0...9]</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>B_INF</td>
<td>Data type: Unsigned16 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>Index 0: receive (r2050, r2060) Index 1: send (p2051, p2061)</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>IF1: Interface 1 Value range: 0 - 125: Bus address of the sender 65535: not assigned</td>
</tr>
</tbody>
</table>

---

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### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r2074[0...19]</strong></td>
<td>IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
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<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td><strong>Note:</strong></td>
<td>IF1: Interface 1</td>
<td>Value range:</td>
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<tr>
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<td>0 - 125: Bus address of the sender</td>
<td>65535: not assigned</td>
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| **r2074[0...3]** | IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv | | |
| ENC | | | |
| Can be changed: - | Calculated: - | Access level: 3 | |
| Data type: Unsigned16 | Dynamic index: - | Func. diagram: - | |
| P-Group: Communications | Units group: - | Unit selection: - | |
| Not for motor type: - | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | |
| | | | |
| **Description:** | Displays the PROFIBUS address of the sender from which the process data (PZD) is received. | | |
| **Note:** | IF1: Interface 1 | Value range: | |
| | 0 - 125: Bus address of the sender | 65535: not assigned | |
## List of parameters

**r2074[0...4]**  
**IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv**  
*TB30, TM150, TM31*

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<th>Unit selection:</th>
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<table>
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<th>Scaling:</th>
<th>Expert list:</th>
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<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

**Description:** Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

**Note:** IF1: Interface 1

**Value range:**
- 0 - 125: Bus address of the sender
- 65535: not assigned

---

**r2074[0...31]**  
**IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv**  
*VECTOR_G*

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<thead>
<tr>
<th>P-Group:</th>
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<tbody>
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</table>

**Description:** Displays the PROFIBUS address of the sender from which the process data (PZD) is received.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20
- [20] = PZD 21
- [21] = PZD 22
- [22] = PZD 23
- [23] = PZD 24
- [24] = PZD 25
- [25] = PZD 26
- [26] = PZD 27
- [27] = PZD 28
- [28] = PZD 29
- [29] = PZD 30
- [30] = PZD 31
- [31] = PZD 32
Parameters
List of parameters

Note:
IF1: Interface 1
Value range:
0 - 125: Bus address of the sender
65535: not assigned

<table>
<thead>
<tr>
<th>r2075[0...9]</th>
<th>IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv</th>
</tr>
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<tbody>
<tr>
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<td>Description:</td>
<td>Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).</td>
</tr>
<tr>
<td>Index:</td>
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</tr>
<tr>
<td>[0] = PZD 1</td>
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<tr>
<td>[1] = PZD 2</td>
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</tr>
<tr>
<td>[2] = PZD 3</td>
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<tr>
<td>[3] = PZD 4</td>
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<tr>
<td>[5] = PZD 6</td>
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<tr>
<td>[6] = PZD 7</td>
<td></td>
</tr>
<tr>
<td>[7] = PZD 8</td>
<td></td>
</tr>
<tr>
<td>[8] = PZD 9</td>
<td></td>
</tr>
<tr>
<td>[9] = PZD 10</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>IF1: Interface 1</td>
</tr>
<tr>
<td>Value range:</td>
<td>0 - 242: Byte offset</td>
</tr>
<tr>
<td>65535: not assigned</td>
<td></td>
</tr>
</tbody>
</table>

<table>
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<th>r2075[0...19]</th>
<th>IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv</th>
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</thead>
<tbody>
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<td>CU_G130_DP,</td>
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<td>CU_G130_PN,</td>
<td>Dynamic index: -</td>
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<tr>
<td>CU_G150_DP,</td>
<td>Unit selection: -</td>
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<tr>
<td>CU_G150_PN</td>
<td>Expert list: 1</td>
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<tr>
<td>Description:</td>
<td>Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).</td>
</tr>
<tr>
<td>Index:</td>
<td></td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td></td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td></td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td></td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td></td>
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<tr>
<td>[5] = PZD 6</td>
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</tr>
<tr>
<td>[6] = PZD 7</td>
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<td>[7] = PZD 8</td>
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<td>[8] = PZD 9</td>
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<td>[9] = PZD 10</td>
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<td>[10] = PZD 11</td>
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<td>[12] = PZD 13</td>
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<tr>
<td>[14] = PZD 15</td>
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<tr>
<td>[15] = PZD 16</td>
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<tr>
<td>[16] = PZD 17</td>
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<tr>
<td>[17] = PZD 18</td>
<td></td>
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<tr>
<td>[18] = PZD 19</td>
<td></td>
</tr>
<tr>
<td>[19] = PZD 20</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

**Note:** IF1: Interface 1  
Value range:  
0 - 242: Byte offset  
65535: not assigned

<table>
<thead>
<tr>
<th><strong>r2075[0...3]</strong></th>
<th><strong>IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv</strong></th>
</tr>
</thead>
</table>
| ENC              | **Can be changed:** -  
|                  | **Calculated:** -  
|                  | **Access level:** 3  
|                  | **Data type:** Unsigned16  
|                  | **Dynamic index:** -  
|                  | **Func. diagram:** -  
|                  | **P-Group:** Communications  
|                  | **Units group:** -  
|                  | **Unit selection:** -  
|                  | **Not for motor type:** -  
|                  | **Scaling:** -  
|                  | **Expert list:** 1  
|                  | **Min**  
|                  | **Max**  
|                  | **Factory setting**  
|                  | **Index:**  
|                  | [0] = PZD 1  
|                  | [1] = PZD 2  
|                  | [2] = PZD 3  
|                  | [3] = PZD 4  
|                  | **Description:** Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).  
|                  | **Note:** IF1: Interface 1  
|                  | Value range:  
|                  | 0 - 242: Byte offset  
|                  | 65535: not assigned

<table>
<thead>
<tr>
<th><strong>r2075[0...4]</strong></th>
<th><strong>IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv</strong></th>
</tr>
</thead>
</table>
| TB30, TM150, TM31 | **Can be changed:** -  
|                  | **Calculated:** -  
|                  | **Access level:** 3  
|                  | **Data type:** Unsigned16  
|                  | **Dynamic index:** -  
|                  | **Func. diagram:** -  
|                  | **P-Group:** Communications  
|                  | **Units group:** -  
|                  | **Unit selection:** -  
|                  | **Not for motor type:** -  
|                  | **Scaling:** -  
|                  | **Expert list:** 1  
|                  | **Min**  
|                  | **Max**  
|                  | **Factory setting**  
|                  | **Index:**  
|                  | [0] = PZD 1  
|                  | [1] = PZD 2  
|                  | [2] = PZD 3  
|                  | [3] = PZD 4  
|                  | **Description:** Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).  
|                  | **Note:** IF1: Interface 1  
|                  | Value range:  
|                  | 0 - 242: Byte offset  
|                  | 65535: not assigned

<table>
<thead>
<tr>
<th><strong>r2075[0...31]</strong></th>
<th><strong>IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv</strong></th>
</tr>
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| VECTOR_G          | **Can be changed:** -  
|                   | **Calculated:** -  
|                   | **Access level:** 3  
|                   | **Data type:** Unsigned16  
|                   | **Dynamic index:** -  
|                   | **Func. diagram:** -  
|                   | **P-Group:** Communications  
|                   | **Units group:** -  
|                   | **Unit selection:** -  
|                   | **Not for motor type:** -  
|                   | **Scaling:** -  
|                   | **Expert list:** 1  
|                   | **Min**  
|                   | **Max**  
|                   | **Factory setting**  
|                   | **Index:**  
|                   | [0] = PZD 1  
|                   | [1] = PZD 2  
|                   | [2] = PZD 3  
|                   | [3] = PZD 4  
|                   | [5] = PZD 6  
|                   | [6] = PZD 7  
|                   | **Description:** Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).  
|                   | **Note:** IF1: Interface 1  
|                   | Value range:  
|                   | 0 - 242: Byte offset  
|                   | 65535: not assigned

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Parameters

List of parameters

[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note:
IF1: Interface 1
Value range:
0 - 242: Byte offset
65535: not assigned

r2076[0...9] IF1 PROFinet drive diagnostics telegram offset PZD send / IF1 diag offs send

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description: Displays the PZD byte offset in the PROFinet drive send telegram (controller input).
Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Note:
IF1: Interface 1
Value range:
0 - 242: Byte offset
65535: not assigned
### List of parameters

#### r2076[0...24]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send</td>
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<td>Displays the PZD byte offset in the PROFIdrive send telegram (controller input).</td>
</tr>
<tr>
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<tr>
<td>P-Group: Communications</td>
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</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
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<td>Unit selection: -</td>
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</tr>
<tr>
<td>Factory setting</td>
<td>Expert list: 1</td>
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#### r2076[0...11]

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<th>Value</th>
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<td>Displays the PZD byte offset in the PROFIdrive send telegram (controller input).</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- IF1: Interface 1
- Value range: 0 - 242: Byte offset
- 65535: not assigned
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Value range</th>
<th>Access level</th>
<th>Data type</th>
<th>Units group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the PZD byte offset in the PROFIdrive send telegram (controller input).</td>
<td>0 - 242: Byte offset</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Index:

- **[0]** = PZD 1
- **[1]** = PZD 2
- **[2]** = PZD 3
- **[3]** = PZD 4
- **[4]** = PZD 5
- **[5]** = PZD 6
- **[6]** = PZD 7
- **[7]** = PZD 8
- **[8]** = PZD 9
- **[9]** = PZD 10
- **[10]** = PZD 11
- **[11]** = PZD 12
- **[12]** = PZD 13
- **[13]** = PZD 14
- **[14]** = PZD 15
- **[15]** = PZD 16
- **[16]** = PZD 17
- **[17]** = PZD 18
- **[18]** = PZD 19
- **[19]** = PZD 20
- **[20]** = PZD 21
- **[21]** = PZD 22
- **[22]** = PZD 23
- **[23]** = PZD 24
- **[24]** = PZD 25
- **[25]** = PZD 26
- **[26]** = PZD 27
List of parameters

[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note:
IF1: Interface 1
Value range:
0 - 242: Byte offset
65535: not assigned

r2077[0...15] PROFIBUS diagnostics peer-to-peer data transfer addresses / PB diag peer addr
CU_G130_DP,
CU_G130_PN,
CU_G150_DP,
CU_G150_PN
Can be changed: -
Data type: Unsigned8
P-Group: -
Not for motor type: -
Min -
Max -
Description: Displays the addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PD PZD tel ext
B_INF
Can be changed: T
Data type: Integer16
P-Group: Communications
Not for motor type: -
Min 370
Max 999
Value: 370: SIEMENS telegram 370, PZD-1/1
371: SIEMENS telegram 371, PZD-5/8
999: Free telegram configuration with BICO
Dependency: Refer to: p0922

p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PD PZD tel ext
CU_G130_DP,
CU_G130_PN,
CU_G150_DP,
CU_G150_PN
Can be changed: T
Data type: Integer16
P-Group: Communications
Not for motor type: -
Min 390
Max 999
Value: 370: SIEMENS telegram 370, PZD-1/1
371: SIEMENS telegram 371, PZD-5/8
999: Free telegram configuration with BICO
Dependency: Refer to: p0922
For \( p0922 = 999 \) and \( p2079 < 999 \) the following applies:
The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

### Value:
- \( 390: \) SIEMENS telegram 390, PZD-2/2
- \( 391: \) SIEMENS telegram 391, PZD-3/7
- \( 392: \) SIEMENS telegram 392, PZD-3/15
- \( 393: \) SIEMENS telegram 393, PZD-4/21
- \( 394: \) SIEMENS telegram 394, PZD-3/3
- \( 395: \) SIEMENS telegram 395, PZD-4/25
- \( 999: \) Free telegram configuration with BICO

### p2079
**IF1 PROFldrive PZD telegram selection extended / IF1 PD PZD tel ext**

| ENC | Can be changed: T | Calculated: - | Access level: 3 |
|-----|-------------------|----------------|----------------
| Data type: Integer16 | Dynamic index: - | Func. diagram: - |
| P-Group: Communications | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

#### Description:
Sets the send and receive telegram.
Contrary to \( p0922 \), a telegram can be selected using \( p2079 \) and subsequently expanded.
For \( p0922 < 999 \) the following applies:
\( p2079 \) has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.
For \( p0922 = 999 \) the following applies:
\( p2079 \) can be freely set. If \( p2079 \) is also set to 999, then all of the interconnections can be set.
For \( p0922 = 999 \) and \( p2079 < 999 \) the following applies:
The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

#### Value:
- \( 81: \) SIEMENS telegram 81, PZD-2/6
- \( 82: \) SIEMENS telegram 82, PZD-2/7
- \( 83: \) SIEMENS telegram 83, PZD-2/8
- \( 999: \) Free telegram configuration with BICO

#### Dependency:
Refer to: \( p0922 \)

### p2079
**VECTOR_G**

| ENC | Can be changed: T | Calculated: - | Access level: 3 |
|-----|-------------------|----------------|----------------
| Data type: Integer16 | Dynamic index: - | Func. diagram: - |
| P-Group: Communications | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

#### Description:
Sets the send and receive telegram.
Contrary to \( p0922 \), a telegram can be selected using \( p2079 \) and subsequently expanded.
For \( p0922 < 999 \) the following applies:
\( p2079 \) has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.
For \( p0922 = 999 \) the following applies:
\( p2079 \) can be freely set. If \( p2079 \) is also set to 999, then all of the interconnections can be set.
For \( p0922 = 999 \) and \( p2079 < 999 \) the following applies:
The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

#### Value:
- \( 1: \) Standard telegram 1, PZD-2/2
- \( 2: \) Standard telegram 2, PZD-4/4
- \( 20: \) Standard telegram 20, PZD-2/6
- \( 220: \) SIEMENS telegram 220, PZD-10/10
- \( 352: \) SIEMENS telegram 352, PZD-6/6
- \( 999: \) Free telegram configuration with BICO

#### Dependency:
Refer to: \( p0922 \)
### p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PD PZD tel ext

**Description:**
Sets the send and receive telegram. Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

For p0922 < 999 the following applies:
- p2079 has the same value and is inhibited. All of the interconnections and extensions contained in the telegram are inhibited.

For p0922 = 999 the following applies:
- p2079 can be freely set. If p2079 is also set to 999, then all of the interconnections can be set.

For p0922 = 999 and p2079 < 999 the following applies:
- The interconnections contained in the telegram are inhibited. However, the telegram can be extended.

**Value:**
- 1: Standard telegram 1, PZD-2/2
- 2: Standard telegram 2, PZD-4/4
- 3: Standard telegram 3, PZD-5/9
- 4: Standard telegram 4, PZD-6/14
- 20: Standard telegram 20, PZD-2/6
- 220: SIEMENS telegram 220, PZD-10/10
- 352: SIEMENS telegram 352, PZD-6/6
- 999: Free telegram configuration with BICO

**Dependency:**
Refer to: p0922

### p2080[0...15] BI: Binector-connector converter status word 1 / Bin/con ZSW1

**Description:**
Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form status word 1.

**Index:**
- [0] = Bit 0
- [1] = Bit 1
- [2] = Bit 2
- [3] = Bit 3
- [4] = Bit 4
- [5] = Bit 5
- [6] = Bit 6
- [7] = Bit 7
- [8] = Bit 8
- [9] = Bit 9
- [10] = Bit 10
- [12] = Bit 12
- [13] = Bit 13
- [14] = Bit 14
- [15] = Bit 15

**Dependency:**
Refer to: p2088, r2089

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
**Parameters**

**List of parameters**

---

**p2081[0...15] BI: Binector-connector converter status word 2 / Bin/con ZSW2**

- **B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, TB30, TM150, TM31, VECTOR_G**
- **Can be changed:** U, T  
  **Calculated:** -  
  **Access level:** 3
- **Data type:** Unsigned32 / Binary  
  **Dynamic index:** -  
  **Func. diagram:** 2472
- **P-Group:** Communications  
  **Units group:** -  
  **Unit selection:** -
- **Not for motor type:** -  
  **Scaling:** -  
  **Expert list:** 1

**Min** | **Max** | **Factory setting**
--- | --- | ---
- | - | 0

**Description:**

Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form status word 2.

**Index:**

- [0] = Bit 0
- [1] = Bit 1
- [2] = Bit 2
- [3] = Bit 3
- [4] = Bit 4
- [5] = Bit 5
- [6] = Bit 6
- [7] = Bit 7
- [8] = Bit 8
- [9] = Bit 9
- [10] = Bit 10
- [12] = Bit 12
- [13] = Bit 13
- [14] = Bit 14
- [15] = Bit 15

**Dependency:**

Refer to: p2088, r2089

**Notice:**

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**

For clock synchronous operation, bit 12 to 15 to transfer the sign-of-life are reserved in status word 2 - and may not be freely interconnected.

---

**p2082[0...15] BI: Binector-connector converter status word 3 / Bin/con ZSW3**

- **B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, TB30, TM150, TM31, VECTOR_G**
- **Can be changed:** U, T  
  **Calculated:** -  
  **Access level:** 3
- **Data type:** Unsigned32 / Binary  
  **Dynamic index:** -  
  **Func. diagram:** 2472
- **P-Group:** Communications  
  **Units group:** -  
  **Unit selection:** -
- **Not for motor type:** -  
  **Scaling:** -  
  **Expert list:** 1

**Min** | **Max** | **Factory setting**
--- | --- | ---
- | - | 0

**Description:**

Selects bits to be sent to the PROFIdrive controller.

The individual bits are combined to form free status word 3.

**Index:**

- [0] = Bit 0
- [1] = Bit 1
- [2] = Bit 2
- [3] = Bit 3
- [4] = Bit 4
- [5] = Bit 5
- [6] = Bit 6
- [7] = Bit 7
- [8] = Bit 8
- [9] = Bit 9
- [10] = Bit 10
- [12] = Bit 12
- [13] = Bit 13
### BI: Binector-connector converter status word 4 / Bin/con ZSW4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2083[0...15]</td>
<td>Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 4.</td>
<td></td>
<td>U, T</td>
<td>Unsigned32 / Binary</td>
<td>Communications</td>
<td></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2088, r2089

### BI: Binector-connector converter status word 5 / Bin/con ZSW5

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2084[0...15]</td>
<td>Selects bits to be sent to the PROFIdrive controller. The individual bits are combined to form free status word 5.</td>
<td></td>
<td>U, T</td>
<td>Unsigned32 / Binary</td>
<td>Communications</td>
<td></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2088, r2089

---

**[14] = Bit 14**  
**[15] = Bit 15**  

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### List of parameters

**p2088[0...4]**

Invert binector-connector converter status word / Bin/con ZSW inv

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 Bit 0</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01 Bit 1</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02 Bit 2</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03 Bit 3</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04 Bit 4</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05 Bit 5</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06 Bit 6</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07 Bit 7</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08 Bit 8</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09 Bit 9</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10 Bit 10</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11 Bit 11</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12 Bit 12</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13 Bit 13</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14 Bit 14</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15 Bit 15</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2088, r2089

**r2089[0...4]**

CO: Send binector-connector converter status word / Bin/con ZSW send

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01 Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02 Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2080, p2081, p2082, p2083, r2089
### r2090.0...15

**BO: IF1 PROFIBUS PZD1 receive bit-serial / IF1 PZD1 recv bitw**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
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<tr>
<td>11</td>
<td>Bit 11</td>
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</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>ON</td>
<td>OFF</td>
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</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### r2091.0...15

**BO: IF1 PROFIdrive PZD2 receive bit-serial / IF1 PZD2 recv bitw**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
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<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
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<td>-</td>
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<td>13</td>
<td>Bit 13</td>
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<td>-</td>
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<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>
### List of parameters

#### r2092.0...15

**BO: IF1 PROFIdrive PZD3 receive bit-serial / IF1 PZD3 recv bitw**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Binector output for bit-serial interconnection of PZD3 received from the PROFIdrive controller.

**Note:** IF1: Interface 1

#### r2093.0...15

**BO: IF1 PROFIdrive PZD4 receive bit-serial / IF1 PZD4 recv bitw**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

**Note:** IF1: Interface 1
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### Note:
IF1: Interface 1

### Description:
Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller. The PZD is selected via p2099[0].

### Dependency:
Refer to: p2099

---

### Parameters

#### r2094.0...15

**BO: Connector-binector converter binector output / Con/bin outp**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Binector output for bit-serial onward interconnection of a PZD word received from the PROFIdrive controller. The PZD is selected via p2099[0].

**Dependency:**
Refer to: p2099

---

### Parameters

#### r2095.0...15

**BO: Connector-binector converter binector output / Con/bin outp**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller. The PZD is selected via p2099[1].

---

© Siemens AG 2012 All Rights Reserved
SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Bit field: Bit Signal name 1 signal 0 signal FP

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2099

---

#### p2098[0...1]

**Inverter connector-binector converter binector output / Con/bin outp inv**

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Communications</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
</tbody>
</table>

**Calculated:** -  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

-  
-  
0000 0000 0000 0000 bin

**Description:** Setting to invert the individual binector outputs of the connector-binector converter.

Using p2098[0], the signals of CI: p2099[0] are influenced.

Using p2098[1], the signals of CI: p2099[1] are influenced.

---

**Bit field: Bit Signal name 1 signal 0 signal FP**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r2094, r2095, p2099

---
**Parameters**

**List of parameters**

**p2099[0...1] Connector-binector converter signal source / Con/bin S_src**

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Integer16</td>
</tr>
<tr>
<td>P-Group: Communications</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the connector-binector converter. A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

**Dependency:** Refer to: r2094, r2095

**Note:** From the signal source set via the connector input, the corresponding lower 16 bits are converted. p2099[0...1] together with r2094.0...15 and r2095.0...15 forms two connector-binector converters:
- Connector input p2099[0] to binector output in r2094.0...15
- Connector input p2099[1] to binector output in r2095.0...15

**p2100[0...19] Setting the fault number for fault response / F_no F response**

<table>
<thead>
<tr>
<th>All objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Messages</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Selects the faults for which the fault response should be changed

**Dependency:** The fault is selected and the required response is set under the same index.

**Notice:** For the following cases, it is not possible to re-parameterize the fault response to a fault:
- if there is no existing fault number.
- the message type is not "fault" (F).

**Note:** Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

**p2101[0...19] Setting the fault response / Fault response**

<table>
<thead>
<tr>
<th>B_INF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Messages</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-----</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the fault response for the selected fault.

**Value:**
- 0: NONE
- 1: OFF1
- 2: OFF2

**Dependency:** The fault is selected and the required response is set under the same index.

**Note:** Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.
**Parameters**

List of parameters

---

**p2101[0...19]**  
**Setting the fault response / Fault response**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL**

Can be changed: U, T  
Data type: Integer16  
P-Group: Messages  
Not for motor type: -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Description:
Sets the fault response for the selected fault.

Value:
0: NONE

Dependency:
The fault is selected and the required response is set under the same index.

Note:
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

---

**p2101[0...19]**  
**Setting the fault response / Fault response**

- **VECTOR_G**

Can be changed: U, T  
Data type: Integer16  
P-Group: Messages  
Not for motor type: -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Description:
Sets the fault response for the selected fault.

Value:
0: NONE
1: OFF1
2: OFF2
3: OFF3
4: STOP1 (being developed)
5: STOP2
6: Internal armature short-circuit / DC braking
7: ENCODER (p0491)

Dependency:
The fault is selected and the required response is set under the same index.

Refer to: p2100

Note:
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

The fault response can only be changed for faults with the appropriate identification (see the List Manual, chapter "Faults and alarms").

Example:
F12345 and fault response = OFF3 (OFF1, OFF2, NONE)  
--> The default fault response OFF3 can be changed to OFF1, OFF2 or NONE.

Re value = 1 (OFF1):
Braking along the ramp-function generator down ramp followed by a pulse inhibit.

Re value = 2 (OFF2):
Internal/external pulse inhibit.

Re value = 3 (OFF3):
Braking along the OFF3 down ramp followed by a pulse inhibit.

Re value = 5 (STOP2):
n_set = 0

Re value = 6 (armature short-circuit, internal/DC braking):
The value can only be set for all motor data sets when p1231 = 3, 4.

a) For synchronous motors (p0300 = 2xx, 4xx), an internal armature short-circuit is executed.
b) For induction motors (p0300 = 1xx), a DC braking is initiated.

Re value = 7 (ENCODER (p0491)):
The fault response set in p0491 is executed if applicable.
### List of parameters

**Note:**

IASC: Internal Armature Short Circuit  
DCBRK: DC braking

#### p2102

**Bl: Acknowledge all faults / Ackn all faults**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>P-Group</th>
<th>Units group</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Sets the signal source to acknowledge all faults at all drive objects of the drive system.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Note:**

A fault acknowledgement is triggered with a 0/1 signal.

#### p2103[0...n]

**Bl: 1. Acknowledge faults / 1. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>P-Group</th>
<th>Units group</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Sets the first signal source to acknowledge faults.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>CDS, p0170</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notice:**

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**

A fault acknowledgement is triggered with a 0/1 signal.

#### p2103

**Bl: 1. Acknowledge faults / 1. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>P-Group</th>
<th>Units group</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL</td>
<td>Sets the first signal source to acknowledge faults.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Notice:**

The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**

A fault acknowledgement is triggered with a 0/1 signal.

#### p2104[0...n]

**Bl: 2. Acknowledge faults / 2. Acknowledge**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Unit selection</th>
<th>P-Group</th>
<th>Units group</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Sets the second signal source to acknowledge faults.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>CDS, p0170</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Note:**

A fault acknowledgement is triggered with a 0/1 signal.
### List of parameters

#### p2104

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2104 BI: 2. Acknowledge faults / 2. Acknowledge</td>
<td>Sets the second signal source to acknowledge faults.</td>
<td>A fault acknowledgement is triggered with a 0/1 signal.</td>
</tr>
</tbody>
</table>

**Parameter Details:**
- **CAN:** CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL
- **Type:** Unsigned32 / Binary
- **Access level:** 3
- **Units group:** Messages
- **Calculated:**
- **Dynamic index:**
- **Expert list:** 1
- **Factory setting:** 0

---

#### p2105

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2105[0...n] BI: 3. Acknowledge faults / 3. Acknowledge</td>
<td>Sets the third signal source to acknowledge faults.</td>
<td>A fault acknowledgement is triggered with a 0/1 signal.</td>
</tr>
</tbody>
</table>

**Parameter Details:**
- **CAN:** B_INF, VECTOR_G
- **Type:** Unsigned32 / Binary
- **Access level:** 3
- **Units group:** CDS, p0170
- **Calculated:**
- **Dynamic index:**
- **Expert list:** 1
- **Factory setting:** 0

---

#### p2106

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2106[0...n] BI: External fault 1 / External fault 1</td>
<td>Sets the signal source for external fault 1.</td>
<td>An external fault is triggered with a 1/0 signal.</td>
</tr>
</tbody>
</table>

**Parameter Details:**
- **CAN:** B_INF, VECTOR_G
- **Type:** Unsigned32 / Binary
- **Access level:** 3
- **Units group:** CDS, p0170
- **Calculated:**
- **Dynamic index:**
- **Expert list:** 1
- **Factory setting:** 1

**Note:**
- If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

---

**Dependency:**
- Refer to: F07860
List of parameters

### p2106
**BI: External fault 1 / External fault 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2106</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
<td>Unsigned32 / Binary</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: F07860

**Note:**
- An external fault is triggered with a 1/0 signal.
- If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

### p2107[0...n]
**BI: External fault 2 / External fault 2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2107</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
<td>Unsigned32 / Binary</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: F07861

**Note:**
- An external fault is triggered with a 1/0 signal.
- If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

### p2107
**BI: External fault 2 / External fault 2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2107</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
<td>Unsigned32 / Binary</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: F07861

**Note:**
- An external fault is triggered with a 1/0 signal.
- If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

### p2108[0...n]
**BI: External fault 3 / External fault 3**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2108</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
<td>Unsigned32 / Binary</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: F07861

**Note:**
- An external fault is triggered with a 1/0 signal.
- If this fault is output at the Control Unit, then it is transferred to all existing drive objects.

**Description:**
- Sets the signal source for external fault 3.
- External fault 3 is initiated by the following AND logic operation:
  - BI: p2108 negated
  - BI: p3111
  - BI: p3112 negated
## Parameters
### List of parameters

#### p2108

**BI: External fault 3 / External fault 3**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>Access level: 3</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for external fault 3.
External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

#### r2109[0...63]

**Fault time removed in milliseconds / t_flt resolved ms**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned32</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Access level: 3</td>
</tr>
</tbody>
</table>

**Description:**
Displays the system runtime in milliseconds when the fault was removed.

#### r2110[0...63]

**Alarm number / Alarm number**

<table>
<thead>
<tr>
<th>Data type</th>
<th>Dynamic index</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned16</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Access level: 2</td>
</tr>
</tbody>
</table>

**Description:**
This parameter is identical to r2122.
### p2111 Alarm counter / Alarm counter

<table>
<thead>
<tr>
<th>Description</th>
<th>Number of alarms that have occurred after the last reset.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>When p2111 is set to 0, the following is initiated:</td>
</tr>
<tr>
<td></td>
<td>- all of the alarms of the alarm buffer that have gone [0...7] are transferred into the alarm history [8...63].</td>
</tr>
<tr>
<td></td>
<td>- the alarm buffer [0...7] is deleted.</td>
</tr>
<tr>
<td>Refer to:</td>
<td>r2110, r2122, r2123, r2124, r2125</td>
</tr>
<tr>
<td>Note:</td>
<td>The parameter is reset to 0 at POWER ON.</td>
</tr>
</tbody>
</table>

### p2112[0...n] BI: External alarm 1 / External alarm 1

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for external alarm 1.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>Refer to: A07850</td>
</tr>
<tr>
<td>Note:</td>
<td>An external alarm is triggered with a 1/0 signal.</td>
</tr>
</tbody>
</table>

### r2114[0...1] System runtime total / Sys runtime tot

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the total system runtime for the drive unit.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = Milliseconds</td>
</tr>
<tr>
<td></td>
<td>[1] = Days</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r0948, r2109, r2123, r2125, r2124, r2130, r2136, r2145, r2146</td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

#### p2116[0...n] BI: External alarm 2 / External alarm 2

- **B_INF, VECTOR_G**
- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Messages
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Dynamic index:** CDS, p0170
- **Access level:** 3
- **Unit group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 1

**Description:**
Sets the signal source for external alarm 2.

**Dependency:**
Refer to: A07851

**Note:**
An external alarm is triggered with a 1/0 signal.

#### p2117[0...n] BI: External alarm 3 / External alarm 3

- **B_INF, VECTOR_G**
- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Messages
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Dynamic index:** CDS, p0170
- **Access level:** 3
- **Unit group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 1

**Description:**
Sets the signal source for external alarm 3.

**Dependency:**
Refer to: A07852

**Note:**
An external alarm is triggered with a 1/0 signal.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter (p2118[0...19])</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the message number for message type. / Msg_no Msg_type&lt;br&gt;All objects</td>
<td>Can be changed: U, T&lt;br&gt;Data type: Unsigned16&lt;br&gt;P-Group: Messages&lt;br&gt;Not for motor type: -&lt;br&gt;Min 0&lt;br&gt;Max 65535&lt;br&gt;Calculated: -&lt;br&gt;Access level: 3&lt;br&gt;Func. diagram: 1750, 8075</td>
<td>1: Fault (F)&lt;br&gt;2: Alarm (A)&lt;br&gt;3: No message (N)&lt;br&gt;Dynamic index: -&lt;br&gt;Units group: -&lt;br&gt;Scaling: -&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: -&lt;br&gt;Expert list: 1</td>
<td>Selects faults or alarms for which the message type should be changed.&lt;br&gt;Refer to: p2119</td>
<td>It is not possible to re-parameterize the message type in the following cases:&lt;br&gt;- if there is no existing message number.</td>
<td>Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p2119[0...19])</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting the message type / Message type&lt;br&gt;All objects</td>
<td>Can be changed: U, T&lt;br&gt;Data type: Integer16&lt;br&gt;P-Group: Messages&lt;br&gt;Not for motor type: -&lt;br&gt;Min 1&lt;br&gt;Max 3&lt;br&gt;Calculated: -&lt;br&gt;Access level: 3&lt;br&gt;Func. diagram: 1750, 8075</td>
<td></td>
<td>Selects the fault or alarm selection and sets the required type of message realized under the same index.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (r2120)</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO: Sum of fault and alarm buffer changes / Sum buffer changed&lt;br&gt;All objects</td>
<td>Can be changed: -&lt;br&gt;Data type: Unsigned16&lt;br&gt;P-Group: Messages&lt;br&gt;Not for motor type: -&lt;br&gt;Min -&lt;br&gt;Max -&lt;br&gt;Calculated: -&lt;br&gt;Access level: 4&lt;br&gt;Func. diagram: 8065</td>
<td></td>
<td>Displays the sum of all of the fault and alarm buffer changes in the drive unit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

1-497
Parameters
List of parameters

r2121  CO: Counter, alarm buffer changes / Alrm buff changed
All objects  Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned16  Dynamic index: -  Func. diagram: 8065
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
-  -
Description:  This counter is incremented every time the alarm buffer changes.
Dependency:  Refer to: r2110, r2122, r2123, r2124, r2125

r2122[0...63]  Alarm code / Alarm code
All objects  Can be changed: -  Calculated: -  Access level: 2
Data type: Unsigned16  Dynamic index: -  Func. diagram: 1750, 8065
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
-  -
Description:  Displays the number of alarms that have occurred.
Dependency:  Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123
Notice:  The properties of the alarm buffer should be taken from the corresponding product documentation.
Note:  The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
Alarm buffer structure (general principle):
r2122[0], r2124[0], r2123[0], r2125[0] --> alarm 1 (the oldest)

...  
r2122[7], r2124[7], r2123[7], r2125[7] --> Alarm 8 (the latest)
When the alarm buffer is full, the alarms that have gone are entered into the alarm history:
r2122[8], r2124[8], r2123[8], r2125[8] --> Alarm 1 (the latest)

...  
r2122[63], r2124[63], r2123[63], r2125[63] --> alarm 56 (the oldest)

r2123[0...63]  Alarm time received in milliseconds / t_alarm recv ms
All objects  Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: 1750, 8065
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
- [ms]  - [ms]  - [ms]
Description:  Displays the system runtime in milliseconds when the alarm occurred.
Dependency:  Refer to: r2110, r2114, r2122, r2124, r2125, r2134, r2145, r2146, r3121, r3123
Notice:  The time comprises r2145 (days) and r2123 (milliseconds).
Note:  The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

r2124[0...63]  Alarm value / Alarm value
All objects  Can be changed: -  Calculated: -  Access level: 3
Data type: Integer32  Dynamic index: -  Func. diagram: 1750, 8065
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
-  -
Description:  Displays additional information about the active alarm (as integer number).
### Dependency:
Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123

### Note:
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

### r2125[0...63]
**Alarm time removed in milliseconds / t_alarm res ms**

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1750, 8065</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [ms]</td>
<td>- [ms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Displays the system runtime in milliseconds when the alarm was cleared.

### Dependency:
Refer to: r2110, r2114, r2122, r2123, r2124, r2134, r2145, r2146, r3121, r3123

### Notice:
The time comprises r2146 (days) and r2125 (milliseconds).
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

### p2126[0...19]
**Setting fault number for acknowledge mode / Fault_no ackn_mode**

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1750, 8075</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Selects the faults for which the acknowledge mode is to be changed

### Dependency:
Selects the faults and sets the required acknowledge mode realized under the same index

### Notice:
It is not possible to re-parameterize the acknowledge mode of a fault in the following cases:
- Fault number does not exist.
- Message type is not "fault" (F).

### Note:
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

### p2127[0...19]
**Sets acknowledgement mode / Acknowledge mode**

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1750, 8075</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Sets the acknowledge mode for selected fault.

### Value:
1: Acknowledgment only using POWER ON
2: Ack IMMEDIATELY after the fault cause has been removed
3: Acknowledgement only for PULSE INHIBIT

### Dependency:
Selects the faults and sets the required acknowledge mode realized under the same index

### Notice:
It is not possible to re-parameterize the acknowledge mode of a fault in the following cases:
- if there is no existing fault number.
- the message type is not "fault" (F).

### Note:
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.
The acknowledge mode can only be changed for faults with the appropriate identification.
Example:
F12345 and acknowledge mode = IMMEDIATELY (POWER ON)
--> The acknowledge mode can be changed from IMMEDIATELY to POWER ON.

### p2128[0...15] Selecting fault/alarm code for trigger / Message trigger

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1750, 8070</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
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<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Selects faults or alarms which can be used as trigger.

**Dependency:**
Refer to: r2129

### r2129.0...15 CO/BO: Trigger word for faults and alarms / Trigger word

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
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<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1530, 8070</td>
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<td>Units group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<table>
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<tr>
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<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
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</tbody>
</table>

**Description:**
Trigger signal for the selected faults and alarms

**Dependency:**
If one of the faults or alarms selected in p2128[n] occurs, then the particular bit of this binector output is set.
Refer to: r2128

**Note:**
CO: r2129 = 0 --> None of the selected messages has occurred.
CO: r2129 > 0 --> At least one of the selected messages has occurred.

### r2130[0...63] Fault time received in days / t_fault recv days

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
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<tr>
<td>Data type:</td>
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<td>Func. diagram: 8060</td>
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<td>Scaling: -</td>
<td>Expert list: 1</td>
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</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the system runtime in days when the fault occurred.

**Dependency:**
Refer to: r0945, r0947, r0948, r0949, r2109, r2114, r2133, r2136, r3115, r3120, r3122

**Notice:**
The time comprises r2130 (days) and r0948 (milliseconds).

**Note:**
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2131</td>
<td>CO: Actual fault code / Actual fault code</td>
<td>Displays the code of the oldest active fault.</td>
<td>Refer to: r3131, r3132</td>
</tr>
<tr>
<td></td>
<td>0: No fault present.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r2132</td>
<td>CO: Actual alarm code / Actual alarm code</td>
<td>Displays the code of the last alarm that occurred.</td>
<td>0: No alarm present.</td>
</tr>
<tr>
<td>r2133[0...63]</td>
<td>Fault value for float values / Fault val float</td>
<td>Displays additional information about the fault that occurred for float values.</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136, r3115</td>
</tr>
<tr>
<td>r2134[0...63]</td>
<td>Alarm value for float values / Alarm value float</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
</tr>
<tr>
<td>r2135.0...15</td>
<td>CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2</td>
<td>Displays the second status word of faults and alarms.</td>
<td></td>
</tr>
</tbody>
</table>

### Details

- **r2131**
  - **Data type:** Unsigned16
  - **P-Group:** Messages
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -
  - **Dependency:** Refer to: r3131, r3132
- **Description:** Displays the code of the oldest active fault.
- **Note:** 0: No fault present.

- **r2132**
  - **Data type:** Unsigned16
  - **P-Group:** Messages
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -
  - **Dependency:** Refer to: r3131, r3132
- **Description:** Displays the code of the last alarm that occurred.
- **Note:** 0: No alarm present.

- **r2133[0...63]**
  - **Data type:** FloatingPoint32
  - **P-Group:** Messages
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -
  - **Dependency:** Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2136, r3115
- **Description:** Displays additional information about the fault that occurred for float values.
- **Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

- **r2134[0...63]**
  - **Data type:** FloatingPoint32
  - **P-Group:** Messages
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -
  - **Dependency:** Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123
- **Description:** Displays additional information about the active alarm for float values.
- **Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

- **r2135.0...15**
  - **Data type:** Unsigned16
  - **P-Group:** Displays, signals
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -
  - **Dependency:** Refer to: r3131, r3132
- **Description:** Displays the second status word of faults and alarms.
### List of parameters

#### r2136[0...63] Fault time removed in days / t_flt resolv. days

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>0</td>
<td>Fault encoder 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>0</td>
<td>Fault encoder 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>0</td>
<td>Fault encoder 3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>Fault motor overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>Fault power unit thermal overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>Alarm motor overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>Alarm power unit thermal overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the system runtime in days when the fault was removed.

**Dependency:** Refer to: r0945, r0947, r0948, r0949, r2109, r2114, r2130, r2133, r3115, r3120, r3122

**Notice:** The time comprises r2136 (days) and r2109 (milliseconds).

**Note:** The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

#### r2138.7...15 CO/BO: Control word faults/alarms / STW fault/alarm

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>07</td>
<td>0</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>0</td>
<td>External alarm 1 (A07850) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>0</td>
<td>External alarm 2 (A07851) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>0</td>
<td>External alarm 3 (A07852) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>0</td>
<td>External fault 1 (F07860) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>0</td>
<td>External fault 2 (F07861) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>0</td>
<td>External fault 3 (F07862) effective</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2103, p2104, p2105, p2106, p2107, p2108, p2112, p2116, p2117, p3110, p3111, p3112

#### r2139.0...12 CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>0</td>
<td>Being acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>0</td>
<td>Acknowledgment required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>0</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>0</td>
<td>Safety message present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>0</td>
<td>Internal message 1 present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>0</td>
<td>Alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>0</td>
<td>Internal message 2 present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Alarm class bit 0</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>12</td>
<td>Alarm class bit 1</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

**Note:**

Re bit 03, 05, 07:

These bits are set if at least one fault/alarm occurs. Data is entered into the fault/alarm buffer with delay. This is the reason that the fault/alarm buffer should only be read if, after "fault present"/"alarm present" has occurred, a change in the buffer was also detected (r0944, r9744, r2121).

Re bit 06, 08:

These status bits are used for internal diagnostic purposes only.

Re bit 11, 12:

These status bits are used for the classification of internal alarm classes and are intended for diagnostic purposes only on certain automation systems with integrated SINAMICS functionality.

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2140[0...n]</td>
<td>Hysteresis speed 2 / n_hysteresis 2</td>
<td></td>
<td>3</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>3_1</td>
<td>p0505</td>
<td></td>
<td>90.00 [rpm]</td>
</tr>
<tr>
<td>p2141[0...n]</td>
<td>Speed threshold 1 / n_thresh val 1</td>
<td></td>
<td>3</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>3_1</td>
<td>p0505</td>
<td></td>
<td>5.00 [rpm]</td>
</tr>
<tr>
<td>p2142[0...n]</td>
<td>Hysteresis speed 1 / n_hysteresis 1</td>
<td></td>
<td>3</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>3_1</td>
<td>p0505</td>
<td></td>
<td>2.00 [rpm]</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>P-Group</th>
<th>Units group</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2144[0...n]</strong></td>
<td><strong>BI: Motor stall monitoring enable (negated) / Mot stall enab neg</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>VECTOR_G</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<td></td>
<td>Unsigned32 / Binary</td>
<td>CDS, p0170</td>
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<td>Dynamic index: -</td>
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<td>P-Group: -</td>
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<td>Units group: -</td>
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<tr>
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<td>Not for motor type: -</td>
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<td></td>
<td></td>
<td></td>
<td>Scaling: -</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source for the negated enable (0 = enable) of the motor stall monitoring.</td>
<td></td>
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<td></td>
<td>Dependency:</td>
<td>Refers to: p2163, p2164, p2166, r2197, r2198</td>
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<td>Refer to: F07900</td>
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<tr>
<td></td>
<td>Note:</td>
<td>When interconnecting the enable signal with r2197.7 then the stall signal is suppressed if there is no speed setpoint - actual value deviation.</td>
<td></td>
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</tr>
<tr>
<td><strong>r2145[0...63]</strong></td>
<td><strong>Alarm time received in days / t_alarm recv days</strong></td>
<td>All objects</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td></td>
<td>P-Group: Messages</td>
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<td></td>
<td></td>
<td></td>
<td>Units group: -</td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td></td>
<td></td>
<td></td>
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<td>Scaling: -</td>
<td></td>
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<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td></td>
<td>Description:</td>
<td>Displays the system runtime in days when the alarm occurred.</td>
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<tr>
<td></td>
<td>Dependency:</td>
<td>Refers to: r2110, r2114, r2122, r2123, r2124, r2125, r2134, r2146, r3121, r3123</td>
<td></td>
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<tr>
<td></td>
<td>Note:</td>
<td>The time comprises r2145 (days) and r2123 (milliseconds).</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r2146[0...63]</strong></td>
<td><strong>Alarm time removed in days / t_alarm res days</strong></td>
<td>All objects</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td>Data type: Unsigned16</td>
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<td></td>
<td></td>
<td></td>
<td>Dynamic index: -</td>
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<tr>
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<td>P-Group: Messages</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Units group: -</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Scaling: -</td>
<td></td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Displays the system runtime in days when the alarm was cleared.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refers to: r2110, r2114, r2122, r2123, r2124, r2125, r2134, r2145, r3121, r3123</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Note:</td>
<td>The time comprises r2146 (days) and r2125 (milliseconds).</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>p2147</strong></td>
<td><strong>Delete fault buffer of all drive objects / Del fault buffer</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>P-Group: Displays, signals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>0</td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Setting to delete the fault buffer of all existing drive objects.</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: Inactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Start to delete the fault buffer of all drive objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refers to: r0945, r0947, r0949, r2109, r2130, r2133, r2136</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Note:</td>
<td>p2147 is automatically set to 0 after execution.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### p2148[0...n]

**BI: RFG active / RFG active**

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:**
  - CALC_MOD_LIM_REF
- **Data type:** Unsigned32 / Binary
- **Dynamic index:** CDS, p0170
- **P-Group:** Messages
- **Units group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Expert list:** 1
- **Access level:** 3
- **Factory setting:** 0

**Description:**
Sets the signal source for the signal "ramp-function generator active" for the following signals/messages:

- "Speed setpoint - actual value deviation within tolerance t_on" (BO: r2199.4)
- "Ramp-up/ramp-down completed" (BO: r2199.5)

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
The binector input is automatically pre-assigned to r1199.2.

The following applies for SERVO:

The pre-assignment using the automatic calculation of the motor/control parameters in the drive (p0340 = 1, 3, 5) is only realized if, at the instant of the calculation, the "setpoint channel" function module is active (r0108.8 = 1). If the calculation in p0340 is not selected when downloading parameters, then the parameter is not preassigned.

### p2149[0...n]

**Monitoring configuration / Monit config**

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** -
- **Data type:** Unsigned16
- **Dynamic index:** DDS, p0180
- **P-Group:** Messages
- **Units group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Expert list:** 1
- **Factory setting:** 0000 0000 0000 0001 bin
- **Access level:** 3

**Description:**
Sets the configuration for messages and monitoring functions.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable alarm A07903</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>01</td>
<td>Load monitoring only in the 1st quadrant</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
</tr>
<tr>
<td>03</td>
<td>n_act &gt; p2155 own hysteresis</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>15</td>
<td>Automatic parameterization carried out (p0340 = 1, p3900 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r2197
Refer to: A07903

**Note:**
Re bit 00:
Alarm A07903 is output when the bit is set with r2197.7 = 0 (n_set <> n_act).
Re bit 01:
When the bit is set, load monitoring is only carried out in the 1st quadrant as a result of the positive characteristic parameters (p2182 ... p2190).
Re bit 03:
When the bit is set, r2197 bit 1 and bit 2 are determined via separate hystereses.
Re bit 15:
The bit indicates whether the automatic parameterization (p0340 = 1, p3900 > 0) for the parameters of the extended monitoring functions was carried out. If the bit is not set (e.g. when the configuration is activated (p0108.15)), the parameterization is automatically carried out during booting even if r3925.0 is already 1.
### p2150[0...n]
**Hysteresis speed / n_hysteresis 3**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access Level</th>
<th>Data Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access level</th>
<th>Units Group</th>
<th>Unit Selection</th>
<th>Expert List</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2150[0...n]</td>
<td>VECTOR_G</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>8010</td>
<td>3</td>
<td>3_1</td>
<td>p0505</td>
<td>1</td>
<td>0.00 [rpm]</td>
<td>300.00 [rpm]</td>
<td>2.00 [rpm]</td>
</tr>
<tr>
<td>Description</td>
<td>Sets the hysteresis speed (bandwidth) for the following signals:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;</td>
<td>n_act</td>
<td>&lt; speed threshold value 3&quot; (BO: r2199.0)</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p2161, r2197, r2199</td>
<td></td>
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</tr>
</tbody>
</table>

### p2151[0...n]
**CI: Speed setpoint for messages/signals / n_set for msg**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access Level</th>
<th>Data Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access level</th>
<th>Units Group</th>
<th>Unit Selection</th>
<th>Expert List</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2151[0...n]</td>
<td>VECTOR_G</td>
<td>3</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>8010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1170[0]</td>
</tr>
<tr>
<td>Description</td>
<td>Sets the signal source for the speed setpoint for the following messages:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;Speed setpoint - actual value deviation within tolerance t_off&quot; (BO: r2197.7)</td>
<td>&quot;Ramp-up/ramp-down completed&quot; (BO: r2199.5)</td>
<td>&quot;</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r2197, r2198, r2199</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

### p2153[0...n]
**Speed actual value filter time constant / n_act_filt T**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access Level</th>
<th>Data Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access level</th>
<th>Units Group</th>
<th>Unit Selection</th>
<th>Expert List</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2153[0...n]</td>
<td>VECTOR_G</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>8010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0 [ms]</td>
<td>1000000 [ms]</td>
<td>0 [ms]</td>
</tr>
<tr>
<td>Description</td>
<td>Sets the time constant of the PT1 element to smooth the speed / velocity actual value. The smoothed actual speed/velocity is compared with the threshold values and is only used for messages and signals.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r2169</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### p2154[0...n]
**CI: Speed setpoint 2 / n_set 2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access Level</th>
<th>Data Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>Access level</th>
<th>Units Group</th>
<th>Unit Selection</th>
<th>Expert List</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2154[0...n]</td>
<td>VECTOR_G</td>
<td>3</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>8010</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>Description</td>
<td>Sets the signal source for speed setpoint 2. The sum of p2151 and p2154 is used for the following messages/signals:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&quot;Speed setpoint - actual value deviation within tolerance t_off&quot; (r2197.7)</td>
<td>&quot;Speed setpoint - actual value deviation within tolerance t_on&quot; (r2199.4)</td>
<td>&quot;Ramp-up/ramp-down completed&quot; (r2199.5)</td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r2169</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Dependency: Refer to: p2151, r2197, r2199

**p2155[0...n]**  
**Speed threshold 2 / n_thresh val 2**

- **VECTOR_G**
  - Can be changed: U, T
  - Calculated: CALC_MOD_LIM_REF
  - Access level: 3
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Messages
- **Units group:** 3_1
- **Not for motor type:** -
- **Scaling:** -
- **Min:**
  - 0.00 [rpm]
  - 210000.00 [rpm]
  - 900.00 [rpm]
  - Factory setting
- **Expert list:** 1
  - Expert selection:
  - p0505
- **Min Max Factory setting**
  - 0.00 [rpm] 210000.00 [rpm] 900.00 [rpm]

**Description:**
Sets the speed threshold value for the following messages:
"\(|n_{\text{act}}| < = \text{speed threshold value 2}\)" (BO: r2197.1)
"\(|n_{\text{act}}| > \text{speed threshold value 2}\)" (BO: r2197.2)

**Dependency:**
Refer to: p2140, r2197

**p2156[0...n]**  
**On delay, comparison value reached / t_on cmp val rchd**

- **VECTOR_G**
  - Can be changed: U, T
  - Calculated: -
  - Access level: 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Messages
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:**
  - 0.0 [ms]
  - 10000.0 [ms]
  - 0.0 [ms]
  - Factory setting
- **Expert list:** 1
  - Expert selection:
  - -
- **Min Max Factory setting**
  - 0.0 [ms] 10000.0 [ms] 0.00 [ms]

**Description:**
Sets the switch-in delay time for the signal "comparison value reached" (BO: r2199.1).

**Dependency:**
Refer to: p2141, p2142, r2199

**p2161[0...n]**  
**Speed threshold 3 / n_thresh val 3**

- **VECTOR_G**
  - Can be changed: U, T
  - Calculated: CALC_MOD_LIM_REF
  - Access level: 3
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Messages
- **Units group:** 3_1
- **Not for motor type:** -
- **Scaling:** -
- **Min:**
  - 0.00 [rpm]
  - 210000.00 [rpm]
  - 5.00 [rpm]
  - Factory setting
- **Expert list:** 1
  - Expert selection:
  - p0505
- **Min Max Factory setting**
  - 0.00 [rpm] 210000.00 [rpm] 5.00 [rpm]

**Description:**
Sets the speed threshold value for the signal "\(|n_{\text{act}}| < \text{speed threshold value 3}\)" (BO: r2199.0).

**Dependency:**
Refer to: p2150, r2199

**p2162[0...n]**  
**Hysteresis speed n_act > n_max / Hyst n_act>n_max**

- **VECTOR_G**
  - Can be changed: U, T
  - Calculated: CALC_MOD_LIM_REF
  - Access level: 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Messages
- **Units group:** 3_1
- **Not for motor type:** -
- **Scaling:** -
- **Min:**
  - 0.00 [rpm]
  - 60000.00 [rpm]
  - 0.00 [rpm]
  - Factory setting
- **Expert list:** 1
- **Expert selection:**
  - p0505
- **Min Max Factory setting**
  - 0.00 [rpm] 60000.00 [rpm] 0.00 [rpm]

**Description:**
Sets the hysteresis speed (bandwidth) for the signal "\(|n_{\text{act}}| > \text{n_max}\)" (BO: r2197.6).

**Dependency:**
Refer to: r1084, r1087, r2197

**Notice:**
For p0322 = 0, the following applies: p2162 \(\leq 0.1 \times p0311\)
For p0322 > 0, the following applies: p2162 \(\leq 1.02 \times p0322 - p1082\)
If one of the conditions is violated, p2162 is appropriately and automatically reduced when exiting the commissioning mode.

**Note:**
For a negative speed limit (r1087) the hysteresis is effective below the limit value and for a positive speed limit (r1084) above the limit value.

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If significant overshoot occurs in the maximum speed range (e.g. due to load shedding), you are advised to increase the dynamic response of the speed controller (if possible). If this is insufficient, the hysteresis p2162 can only be increased by more than 10% of the rated speed when the maximum speed (p0322) of the motor is sufficiently greater than the speed limit p1082.

**p2163[0...n]**  
**Speed threshold 4 / n_thresh val 4**

- **Description:** Sets the speed threshold value for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).
- **Dependency:** Refer to: p2164, p2166, r2197

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access Level</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2163</td>
<td>Speed threshold 4 / n_thresh val 4</td>
<td>VECTOR_G</td>
<td>2</td>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>90.00 [rpm]</td>
</tr>
</tbody>
</table>

**p2164[0...n]**  
**Hysteresis speed 4 / n_hysteresis 4**

- **Description:** Sets the hysteresis speed (bandwidth) for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).
- **Dependency:** Refer to: p2164, p2166, r2197

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access Level</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2164</td>
<td>Hysteresis speed 4 / n_hysteresis 4</td>
<td>VECTOR_G</td>
<td>2</td>
<td>0.00 [rpm]</td>
<td>200.00 [rpm]</td>
<td>2.00 [rpm]</td>
</tr>
</tbody>
</table>

**p2166[0...n]**  
**Off delay n_act = n_set / t_del_off n_i=n_so**

- **Description:** Sets the switch-off delay time for the "speed setpoint - actual value deviation in tolerance t_off" signal/message (BO: r2197.7).
- **Dependency:** Refer to: p2163, p2164, r2197

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access Level</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2166</td>
<td>Off delay n_act = n_set / t_del_off n_i=n_so</td>
<td>VECTOR_G</td>
<td>2</td>
<td>0.00 [ms]</td>
<td>10000.0 [ms]</td>
<td>200.0 [ms]</td>
</tr>
</tbody>
</table>

**p2167[0...n]**  
**Switch-on delay n_act = n_set / t_on n_act=n_set**

- **Description:** Sets the switch-on delay for the "speed setpoint - actual value deviation in tolerance t_on" signal/message (BO: r2199.4).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access Level</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2167</td>
<td>Switch-on delay n_act = n_set / t_on n_act=n_set</td>
<td>VECTOR_G</td>
<td>2</td>
<td>0.00 [ms]</td>
<td>10000.0 [ms]</td>
<td>200.0 [ms]</td>
</tr>
</tbody>
</table>
**List of parameters**

### r2169  CO: Actual speed smoothed signals / n_act smth message

- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Messages
- **Not for motor type:** -
- **Min:** [rpm]
- **Max:** [rpm]

**Description:** Displays the smoothed actual speed for messages/signals.

**Dependency:** Refer to: p2153

### p2174[0...n]  Torque threshold value 1 / M_thresh val 1

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Messages
- **Min:** 0.00 [Nm]
- **Max:** 20000000.00 [Nm]

**Description:** Sets the torque threshold value for the messages:
- "Torque setpoint < torque threshold value 1 and n_set reached" (BO: r2198.9)
- "Torque setpoint < torque threshold value 1" (BO: r2198.10)
- "Torque setpoint > torque threshold value 1" (BO: r2198.13)

**Dependency:** Refer to: p2195, r2198

### p2175[0...n]  Motor blocked speed threshold / Mot lock n_thresh

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Messages
- **Min:** 0.00 [rpm]
- **Max:** 210000.00 [rpm]

**Description:** Sets the speed threshold for the message "Motor blocked" (BO: r2198.6).

**Dependency:** Refer to: p0500, p2177, r2198

**Note:** The following applies for sensorless vector control:
At low speeds in open-loop speed controlled operation (see p1755, p1756), a blocked motor cannot be detected.

### p2177[0...n]  Motor blocked delay time / Mot lock t_del

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Messages
- **Min:** 0.000 [s]
- **Max:** 65.000 [s]

**Description:** Sets the delay time for the message "Motor blocked" (BO: r2198.6).

**Dependency:** Refer to: p0500, p2175, r2198

**Note:** The following applies for sensorless vector control:
At low speeds a locked motor can only be detected if no change is made to open-loop speed controlled operation. If this is the case, the value in p2177 must be reduced accordingly (p2177 < p1758) before time p2177 has elapsed in order to detect the locked state reliably.
As countermeasure, it is generally also possible to set p1750.6. This is only not permitted if the drive is slowly reversed by the load at the torque limit (speed below p1755 for longer than p1758).

### p2178[0...n] Motor stalled delay time / Mot stall t_del

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
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<td>CALC_MOD_REG</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>10.000 [s]</td>
<td>0.010 [s]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for the message "Motor stalled" (BO: r2198.7).

**Dependency:** Refer to: r2198

### p2181[0...n] Load monitoring response / Load monit resp

**VECTOR_G (Ext msg)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
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</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the response when evaluating the load monitoring.

**Value:**

0: Load monitoring disabled
1: A07920 for torque/speed too low
2: A07921 for torque/speed too high
3: A07922 for torque/speed out of tolerance
4: F07923 for torque/speed too low
5: F07924 for torque/speed too high
6: F07925 for torque/speed out of tolerance

**Dependency:** Refer to: p2182, p2183, p2184, p2185, p2186, p2187, p2188, p2189, p2190, p2192, r2198

**Note:** The response to the faults F07923 ... F07925 can be set. F07926 is evaluated only if p2181 is not zero.

### p2182[0...n] Load monitoring speed threshold value 1 / n_thresh 1

**VECTOR_G (Ext msg)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
<td>150.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:** Sets the speed/torque envelope curve for load monitoring.

The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:

- p2182 (n_threshold 1) --> p2185 (M_threshold 1, upper), p2186 (M_threshold 1, lower)
- p2183 (n_threshold 2) --> p2187 (M_threshold 2, upper), p2188 (M_threshold 2, lower)
- p2184 (n_threshold 3) --> p2189 (M_threshold 3, upper), p2190 (M_threshold 3, lower)

**Dependency:** The following applies: p2182 < p2183 < p2184

Refer to: p2183, p2184, p2185, p2186
**List of parameters**

### p2183[0...n] Load monitoring speed threshold value 2 / n_thresh 2

**Description:**
Sets the speed/torque envelope curve for load monitoring. The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
- \( p2182 \) (n_threshold 1) \( \rightarrow \) \( p2185 \) (M_threshold 1, upper), \( p2186 \) (M_threshold 1, lower)
- \( p2183 \) (n_threshold 2) \( \rightarrow \) \( p2187 \) (M_threshold 2, upper), \( p2188 \) (M_threshold 2, lower)
- \( p2184 \) (n_threshold 3) \( \rightarrow \) \( p2189 \) (M_threshold 3, upper), \( p2190 \) (M_threshold 3, lower)

**Dependency:**
The following applies: \( p2182 < p2183 < p2184 \)

Refer to: \( p2182, p2183, p2184, p2185, p2186, p2187, p2188 \)

**Data type:** FloatingPoint32  
**Access level:** 3  
**Func. diagram:** 8013

### p2184[0...n] Load monitoring speed threshold value 3 / n_thresh 3

**Description:**
Sets the speed/torque envelope curve for load monitoring. The envelope curve (upper and lower envelope curve) is defined as follows based on 3 speed thresholds:
- \( p2182 \) (n_threshold 1) \( \rightarrow \) \( p2185 \) (M_threshold 1, upper), \( p2186 \) (M_threshold 1, lower)
- \( p2183 \) (n_threshold 2) \( \rightarrow \) \( p2187 \) (M_threshold 2, upper), \( p2188 \) (M_threshold 2, lower)
- \( p2184 \) (n_threshold 3) \( \rightarrow \) \( p2189 \) (M_threshold 3, upper), \( p2190 \) (M_threshold 3, lower)

**Dependency:**
The following applies: \( p2182 < p2183 < p2184 \)

Refer to: \( p2182, p2183, p2184, p2185, p2186, p2187, p2188 \)

**Data type:** FloatingPoint32  
**Access level:** 3  
**Func. diagram:** 8013

### p2185[0...n] Load monitoring torque threshold 1, upper / M_thres 1 upper

**Description:**
Sets the speed/torque / velocity/force envelope curve for the load monitoring.

**Dependency:**
The following applies: \( p2185 > p2186 \)

Refer to: \( p2182, p2183, p2184, p2185, p2186 \)

**Data type:** FloatingPoint32  
**Access level:** 3  
**Func. diagram:** 8013

### p2186[0...n] Load monitoring torque threshold 1, lower / M_thres 1 lower

**Description:**
Sets the speed/torque / velocity/force envelope curve for the load monitoring.

**Dependency:**
The following applies: \( p2185 > p2186 \)

Refer to: \( p2182, p2183, p2184, p2185, p2186 \)

**Data type:** FloatingPoint32  
**Access level:** 3  
**Func. diagram:** 8013
Parameters

List of parameters

**p2186[0...n]** Load monitoring torque threshold 2, upper / M_thresh 2 upper

<table>
<thead>
<tr>
<th>VECTOR_G (Ext msg)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 8013</td>
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</tr>
<tr>
<td>P-Group: Messages</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
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</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>20000000.00 [Nm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Note:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Dependency:**
The following applies: p2186 < p2185
Refer to: p2182, p2185

**p2187[0...n]** Load monitoring torque threshold 2, lower / M_thresh 2 lower

<table>
<thead>
<tr>
<th>VECTOR_G (Ext msg)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tr>
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<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 8013</td>
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<td>P-Group: Messages</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>20000000.00 [Nm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Note:**
The upper envelope curve is defined by p2185, p2187 and p2189.

**Dependency:**
The following applies: p2187 > p2188
Refer to: p2183, p2188

**p2188[0...n]** Load monitoring torque threshold 3, upper / M_thresh 3 upper

<table>
<thead>
<tr>
<th>VECTOR_G (Ext msg)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 8013</td>
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<tr>
<td>P-Group: Messages</td>
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<td>Unit selection: p0505</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>20000000.00 [Nm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Note:**
The upper envelope curve is defined by p2185, p2187 and p2189.

**Dependency:**
The following applies: p2187 > p2188
Refer to: p2183, p2187

**p2189[0...n]** Load monitoring torque threshold 3, lower / M_thresh 3 lower

<table>
<thead>
<tr>
<th>VECTOR_G (Ext msg)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 8013</td>
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</tr>
<tr>
<td>P-Group: Messages</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>20000000.00 [Nm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The upper envelope curve is defined by p2185, p2187 and p2189.

**Note:**
The upper envelope curve is defined by p2185, p2187 and p2189.

**Dependency:**
The following applies: p2189 > p2190
Refer to: p2184, p2190

**p2190[0...n]** Load monitoring torque threshold 3, lower / M_thresh 3 lower

<table>
<thead>
<tr>
<th>VECTOR_G (Ext msg)</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 8013</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [Nm]</td>
<td>20000000.00 [Nm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Note:**
The lower envelope curve is defined by p2186, p2188 and p2190.

**Dependency:**
The following applies: p2190 < p2189
Refer to: p2184, p2189

**Note:**
The upper envelope curve is defined by p2185, p2187 and p2189.
### List of parameters

**p2192[0...n]**  
**Load monitoring delay time / Load monitor t_del**  
**VECTOR_G (Ext msg)**  
- Can be changed: U, T  
- Calculated: -  
- Access level: 3  
- Data type: FloatingPoint32  
- Dynamic index: DDS, p0180  
- P-Group: Messages  
- Units group: -  
- Not for motor type: -  
- Scaling: -  
- Min: 0.00 [s]  
- Max: 65.00 [s]  
- Factory setting: 10.00 [s]  
**Description:** Sets the delay time to evaluate the load monitoring.

**p2194[0...n]**  
**Torque threshold value 2 / M_thresh val 2**  
**VECTOR_G**  
- Can be changed: U, T  
- Calculated: CALC_MOD_LIM_REF  
- Access level: 2  
- Data type: FloatingPoint32  
- Dynamic index: DDS, p0180  
- P-Group: Messages  
- Units group: -  
- Not for motor type: -  
- Scaling: -  
- Min: 0.00 [%]  
- Max: 100.00 [%]  
- Factory setting: 90.00 [%]  
**Description:** Sets the torque threshold value for the message "Torque utilization < torque threshold value 2" (BO: r2199.11). The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

**p2195[0...n]**  
**Torque utilization switch-off delay / M_util t_off**  
**VECTOR_G**  
- Can be changed: U, T  
- Calculated: -  
- Access level: 2  
- Data type: FloatingPoint32  
- Dynamic index: DDS, p0180  
- P-Group: Messages  
- Units group: -  
- Not for motor type: -  
- Scaling: -  
- Min: 0.0 [ms]  
- Max: 1000.0 [ms]  
- Factory setting: 800.0 [ms]  
**Description:** Sets the switch-off delay time for the negated signal "run-up completed". The message "torque setpoint < p2174" (BO: r2198.10) and "torque utilization < p2194" (BO: r2199.11) are only evaluated after the run-up and the delay time has expired.

**p2196[0...n]**  
**Torque utilization scaling / M_util scal**  
**VECTOR_G**  
- Can be changed: C2(1, 3), U, T  
- Calculated: -  
- Access level: 1  
- Data type: FloatingPoint32  
- Dynamic index: DDS, p0180  
- P-Group: Motor  
- Units group: -  
- Not for motor type: -  
- Scaling: -  
- Min: 0.00 [%]  
- Max: 100.00 [%]  
- Factory setting: 100.00 [%]  
**Description:** Sets the scaling factor for torque utilization (r0033).

**r2197.1...13**  
**CO/BO: Status word monitoring 1 / ZSW monitor 1**  
**VECTOR_G**  
- Can be changed: -  
- Calculated: -  
- Access level: 2  
- Data type: Unsigned16  
- Dynamic index: -  
- P-Group: Messages  
- Units group: -  
- Not for motor type: -  
- Scaling: -  
- Min: -  
- Max: -  
- Factory setting: -  
**Description:** Displays the first status word for monitoring functions.
### List of parameters

**Parameters**

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>[n_act] &lt;= speed threshold value 2 (p2155)</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>02</td>
<td>[n_act] &gt; speed threshold value 2 (p2155)</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>03</td>
<td>(n_act &gt;= 0)</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>06</td>
<td>[n_act] &gt; (n_max)</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>07</td>
<td>Speed setp - act val deviation in tolerance (t_off)</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>13</td>
<td>[n_act] &gt; (n_max) (F07901)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

- Re bit 01, 02:
  - The threshold value is set in \(p2155\) and the hysteresis in \(p2140\).
- Re bit 03:
  - The hysteresis is set in \(p2150\).
- Re bit 06:
  - The hysteresis is set in \(p2162\).
- Re bit 07:
  - The threshold value is set in \(p2163\) and the hysteresis is set in \(p2164\).
- Re bit 13:
  - Only for internal Siemens use.

#### r2198.4...12 CO/BO: Status word monitoring 2 / ZSW monitor 2

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dynamic index: -
- Func. diagram: 1530, 2536
- P-Group: Messages
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**

Displays the second status word for monitoring functions.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>[n_set] &lt; (p2161)</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>05</td>
<td>(n_set &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>8011</td>
</tr>
<tr>
<td>06</td>
<td>Motor blocked</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
</tr>
<tr>
<td>07</td>
<td>Motor stalled</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
</tr>
<tr>
<td>10</td>
<td>[M_set] &lt; torque threshold value 1</td>
<td>Yes</td>
<td>No</td>
<td>8012</td>
</tr>
<tr>
<td>11</td>
<td>Load monitoring signals an alarm</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
</tr>
<tr>
<td>12</td>
<td>Load monitoring signals a fault condition</td>
<td>Yes</td>
<td>No</td>
<td>8013</td>
</tr>
</tbody>
</table>

**Note:**

- Re bit 10:
  - The torque threshold value 1 is set in \(p2174\).
- Re bit 12:
  - This bit is reset after the fault cause disappears, even if the fault itself is still present.

#### r2199.0...12 CO/BO: Status word monitoring 3 / ZSW monitor 3

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dynamic index: -
- Func. diagram: 1530, 2537, 8018
- P-Group: Messages
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**

Displays the third status word for monitoring functions.

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>[n_act] &lt; speed threshold value 3</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>01</td>
<td>for n comparison value reached or exceeded</td>
<td>Yes</td>
<td>No</td>
<td>8010</td>
</tr>
<tr>
<td>04</td>
<td>Speed setp - act val deviation in tolerance (t_on)</td>
<td>Yes</td>
<td>No</td>
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### Parameters

#### List of parameters

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<th>Type</th>
<th>Factory Setting</th>
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<tbody>
<tr>
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### Notes
- **p2200**: The speed threshold value is set in p2161.
- **p2201**: The comparison threshold is set in p2141. We recommend setting the hysteresis (p2142) for canceling the bit to a value lower than that in p2141. Otherwise, the bit is not reset.
- **p2202**: The torque threshold value 2 is set in p2194.

### Dependencies
- Refer to: p2220, p2221, p2222, p2223, r2224, r2229

### Notice
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
### Parameters

#### List of parameters

| Dependency: | Refer to: p2220, p2221, p2222, p2223, r2224, r2229 |
| Notice: | A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. |

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<td>Units group: 9_1</td>
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<tr>
<td>Not for motor type: -</td>
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<tr>
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<tr>
<td>Description:</td>
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<td>Notice:</td>
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<tr>
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<td>Units group: 9_1</td>
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Parameters

List of parameters

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<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
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<tbody>
<tr>
<td>p2212[0...n] CO: Technology controller, fixed value 12 / Tec_ctr fix val 12</td>
<td>Sets the value for fixed value 12 of the technology controller.</td>
<td>Refer to: p2220, p2221, p2222, p2223, r2224, r2229</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.</td>
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<tr>
<td>p2213[0...n] CO: Technology controller, fixed value 13 / Tec_ctr fix val 13</td>
<td>Sets the value for fixed value 13 of the technology controller.</td>
<td>Refer to: p2220, p2221, p2222, p2223, r2224, r2229</td>
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<td>p2214[0...n] CO: Technology controller, fixed value 14 / Tec_ctr fix val 14</td>
<td>Sets the value for fixed value 14 of the technology controller.</td>
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<td>p2215[0...n] CO: Technology controller, fixed value 15 / Tec_ctr fix val 15</td>
<td>Sets the value for fixed value 15 of the technology controller.</td>
<td>Refer to: p2220, p2221, p2222, p2223, r2224, r2229</td>
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### Parameters

#### List of parameters

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<th>Unit selection</th>
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**Description:**
Sets the method to select the fixed setpoints.

**Value:**
1: Direct selection
2: Binary selection

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<th>Value</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
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**Description:**
Sets the signal source to select the fixed value of the technology controller.

**Dependency:**
Refer to: p2221, p2222, p2223

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<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Units group</th>
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<th>Expert list</th>
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**Description:**
Sets the signal source to select the fixed value of the technology controller.

**Dependency:**
Refer to: p2220, p2222, p2223

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<td></td>
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<tr>
<td></td>
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<td>-</td>
<td>0</td>
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</tbody>
</table>

**Description:**
Sets the signal source to select the fixed value of the technology controller.

**Dependency:**
Refer to: p2220, p2221, p2223

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2223[0...n]</td>
<td>Technology controller fixed value selection bit 3 / Tec_ctrl sel bit 3</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>VECTOR_G</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>DCB -</td>
<td>-</td>
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<tr>
<td>(Tech_ctrl)</td>
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<td>Dynamic index: CDS, p0170</td>
<td>Func. diagram: 7950</td>
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<tr>
<td></td>
<td>P-Group: Commands</td>
<td>Units group: -</td>
<td>Unit selection:</td>
<td></td>
<td>-</td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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**Description:**
Sets the signal source to select the fixed value of the technology controller.

**Dependency:**
Refer to: p2220, p2221, p2222
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2224</td>
<td>Displays the selected and effective fixed value of the technology controller.</td>
<td>Refer to: r2229</td>
</tr>
<tr>
<td>r2225.0</td>
<td>Displays the status word for the fixed value selection of the technology controller.</td>
<td></td>
</tr>
<tr>
<td>r2229</td>
<td>Displays the number of the selected fixed setpoint of the technology controller.</td>
<td>Refer to: r2224</td>
</tr>
<tr>
<td>p2230[0...n]</td>
<td>Sets the configuration for the motorized potentiometer of the technology controller.</td>
<td>Refer to: r2231, p2240</td>
</tr>
</tbody>
</table>

**Notice:**
- The following prerequisites must be fulfilled in order to be able to save the setpoint in a non-volatile fashion:
  - Firmware with V2.3 or higher.
  - Control Unit 320 (CU320) with hardware version C or higher (module with NVRAM).
Note:

Re bit 00:
0: The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.
1: The setpoint for the motorized potentiometer is saved and after ON is entered using r2231. In order to save in a non-volatile fashion, bit 03 should be set to 1.
Re bit 02:
0: Without initial rounding-off
1: With initial rounding-off.
The selected ramp-up/down time is correspondingly exceeded. The initial rounding-off is a sensitive way of specifying small changes (progressive reaction when keys are pressed). The jerk for initial rounding is independent of the ramp-up time and only depends on the selected maximum value (p2237).
It is calculated as follows:
\[ r = 0.0001 \times \max(p2237, |p2238|) \times 0.13^2 \times \text{[s]}^2 \]
The jerk is effective until the maximum acceleration is reached (a_max = p2237 [\%] / p2247 [s] or a_max = p2238 [\%] / p2248 [s]), after which the drive continues to run linearly with constant acceleration. The higher the maximum acceleration (the lower that p2247 is), the longer the ramp-up time increases with respect to the set ramp-up time.
Re bit 03:
0: Non-volatile data save de-activated.
1. The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).
Re bit 04:
When the bit is set, the ramp-function generator is computed independent of the pulse enable. The actual output value of the motorized potentiometer is always in r2250.

r2231 Technology controller motorized potentiometer setpoint memory / Tec_ctrl mop mem

<table>
<thead>
<tr>
<th>VECTOR_G (Tech_ctrl)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<tr>
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<th>Func. diagram:</th>
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</thead>
<tbody>
<tr>
<td>Units group:</td>
<td>9_1</td>
<td>Unit selection:</td>
<td>p0595</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>-</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

Factory setting

Description: Displays the setpoint memory for the motorized potentiometer of the technology controller.

Dependency: Refer to: p2230

p2235[0...n] BI: Technology controller motorized potentiometer raise setpoint / Tec_ctrl mop raise

<table>
<thead>
<tr>
<th>VECTOR_G (Tech_ctrl)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<tbody>
<tr>
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</table>

<table>
<thead>
<tr>
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<th>Unsigned32 / Binary</th>
<th>Dynamic index:</th>
<th>CDS, p0170</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Commands</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>-</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

Factory setting

Description: Sets the signal source to continually increase the setpoint for the motorized potentiometer of the technology controller.

The setpoint change (CO: r2250) depends on the set ramp-up time (p2247) and the duration of the signal that is present (BI: p2235).

Dependency: Refer to: p2236
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2236[0...n]</td>
<td><strong>BI: Technology controller motorized potentiometer lower setpoint / Tec_ctrl mop lower</strong>&lt;br&gt;&lt;br&gt;VECTOR_G (Tech_ctrl)&lt;/p&gt;</td>
<td>Sets the signal source to continually reduce the setpoint for the motorized potentiometer of the technology controller. The setpoint change (CO: r2250) depends on the set ramp-down time (p2248) and the duration of the signal that is present (BI: p2236).</td>
</tr>
<tr>
<td>p2237[0...n]</td>
<td><strong>Technology controller motorized potentiometer maximum value / Tec_ctrl mop max</strong>&lt;br&gt;&lt;br&gt;VECTOR_G (Tech_ctrl)&lt;/p&gt;</td>
<td>Sets the maximum value for the motorized potentiometer of the technology controller.</td>
</tr>
<tr>
<td>p2238[0...n]</td>
<td><strong>Technology controller motorized potentiometer minimum value / Tec_ctrl mop min</strong>&lt;br&gt;&lt;br&gt;VECTOR_G (Tech_ctrl)&lt;/p&gt;</td>
<td>Sets the minimum value for the motorized potentiometer of the technology controller.</td>
</tr>
<tr>
<td>p2240[0...n]</td>
<td><strong>Technology controller motorized potentiometer starting value / Tec_ctrl mop start</strong>&lt;br&gt;&lt;br&gt;VECTOR_G (Tech_ctrl)&lt;/p&gt;</td>
<td>Sets the starting value for the motorized potentiometer of the technology controller. For p2230.0 = 0, this setpoint is entered after ON.</td>
</tr>
</tbody>
</table>

**Access level:**
- 3: Expert
- 2: Operator
- 1: User

**Units group:**
- 9_1

**Dynamic index:**
- CDS, p0170
- DDS, p0180

**Expert list:**
- 1

**Scaling:**
- 0

**Factory setting:**
- 100.00 [%]

**Calculated:**
- -

**Data type:**
- Unsigned32 / Binary
- FloatingPoint32

**Units group:**
- 0

**Unit selection:**
- p0595

**Func. diagram:**
- 7954

**Can be changed:**
- U, T
- T
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2245 CO: Technology controller mot. potentiometer setpoint before RFG / Tec_ctr mop befRFG</td>
<td>Sets the effective setpoint in front of the internal motorized potentiometer ramp-function generator of the technology controller.</td>
<td>Refer to: r2250</td>
<td>The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.</td>
</tr>
<tr>
<td>p2247[0...n] Technology controller motorized potentiometer ramp-up time / Tec_ctr mop r-up</td>
<td>Sets the ramp-up time for the internal ramp-function generator for the motorized potentiometer of the technology controller.</td>
<td>Refer to: p2248</td>
<td>The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-up is correspondingly extended.</td>
</tr>
<tr>
<td>p2248[0...n] Technology controller motorized potentiometer ramp-down time / Tec_ctr mop r-down</td>
<td>Sets the ramp-down time for the internal ramp-function generator for the motorized potentiometer of the technology controller.</td>
<td>Refer to: p2247</td>
<td>The time is referred to 100 %. When the initial rounding-off is activated (p2230.2 = 1) the ramp-down is correspondingly extended.</td>
</tr>
<tr>
<td>r2250 CO: Technology controller motorized potentiometer setpoint after RFG / Tec_ctr mop aftRFG</td>
<td>Displays the effective setpoint after the internal ramp-function generator for the motorized potentiometer of the technology controller.</td>
<td>Refer to: r2245</td>
<td></td>
</tr>
</tbody>
</table>
### p2252 Technology controller configuration / Tec_ctrl config

**VECTOR_G**

*(Tech_ctrl)*

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Modulation  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

**-**  
**-**  
**0111 bin**

**Description:**  
Sets the configuration of the technology controller.

**Dependency:**  
Refer to: p2257, p2258, p2267, p2268, p2280, p2285

**Note:**

- **Re bit 00 = 0:**
  - The ramp-down time (p2258) switches to the ramp-up time (p2257) when the sign for the output signal r2260 changes. When the sign changes, the output signal is kept at zero for one arithmetic cycle.
  - Re bit 00 = 1:
    - When r2260 exhibits a positive gradient, the ramp-up time (p2257) is active; when it exhibits a negative gradient, the ramp-down time (p2258) is active. The sign for r2260 does not have any effect on the ramp time.

- **Re bit 01 = 0:**
  - The integration time of the PID controller is evaluated with the gain factor Kp (p2280) (p2285 = integral time).
  - Re bit 01 = 1:
    - The integration time of the PID controller is independent of the gain factor (p2285 = integration time) if p2280 > 0.
    - Re bit 02 = 0:
      - When the PID controller is de-activated via p2200, the output signal r2294 is reduced to zero via the ramp-down time p2293.
      - Re bit 02 = 1:
        - When the PID controller is de-activated via p2200, the output signal r2294 is set directly to zero.

- **Re bit 03 = 0:**
  - The actual values are not limited by p2267 and p2268.
  - Re bit 03 = 1:
    - The actual values are limited by p2267 and p2268.

### p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctrl setp 1

**VECTOR_G**

*(Tech_ctrl)*

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 2

**Data type:** Unsigned32 / FloatingPoint32  
**Dynamic index:** CDS, p0170  
**Func. diagram:** 7958

**P-Group:** Technology  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

**-**  
**-**  
**0**

**Description:**  
Sets the signal source for the setpoint 1 of the technology controller.

**Dependency:**  
Refer to: p2254, p2255

### p2254[0...n] CI: Technology controller setpoint 2 / Tec_ctrl setp 2

**VECTOR_G**

*(Tech_ctrl)*

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned32 / FloatingPoint32  
**Dynamic index:** CDS, p0170  
**Func. diagram:** 7958

**P-Group:** Technology  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting**

**-**  
**-**  
**0**

**Description:**  
Sets the signal source for the setpoint 2 of the technology controller.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Dependency:</th>
<th>Refer to: p2253, p2256</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>p2255</th>
<th>Technology controller setpoint 1 scaling / Tec_ctrl set1 scal</th>
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</thead>
<tbody>
<tr>
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<tr>
<td></td>
<td>Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 7958</td>
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<tr>
<td></td>
<td>P-Group: Technology  Units group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td>0.00 [%]  100.00 [%]  100.00 [%]</td>
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<tr>
<td>Description:</td>
<td>Sets the scaling for the setpoint 1 of the technology controller.</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2253</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p2256</th>
<th>Technology controller setpoint 2 scaling / Tec_ctrl set2 scal</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (Tech_ctrl)</td>
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</tr>
<tr>
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<td>Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 7958</td>
</tr>
<tr>
<td></td>
<td>P-Group: Technology  Units group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td>0.00 [%]  100.00 [%]  100.00 [%]</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the scaling for the setpoint 2 of the technology controller.</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2254</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>p2257</th>
<th>Technology controller, ramp-up time / Tec_ctrl t_ramp-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (Tech_ctrl)</td>
<td>Can be changed: U, T  Calculated: -  Access level: 2</td>
</tr>
<tr>
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<td>Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 7958</td>
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<tr>
<td></td>
<td>P-Group: Technology  Units group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
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<td>0.00 [s]  650.00 [s]  1.00 [s]</td>
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<tr>
<td>Description:</td>
<td>Sets the ramp-up time of the technology controller.</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2252, p2258</td>
</tr>
<tr>
<td>Note:</td>
<td>The ramp-up time is referred to 100 %.</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>p2258</th>
<th>Technology controller ramp-down time / Tec_ctrl t_ramp-dn</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (Tech_ctrl)</td>
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</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 7958</td>
</tr>
<tr>
<td></td>
<td>P-Group: Technology  Units group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td>0.00 [s]  650.00 [s]  1.00 [s]</td>
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<tr>
<td>Dependency:</td>
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<tr>
<td>Note:</td>
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### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td>r2260</td>
<td>Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG</td>
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<tr>
<td>p2261</td>
<td>Technology controller setpoint filter time constant / Tec_ctrl set T</td>
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<td></td>
</tr>
<tr>
<td>r2262</td>
<td>Technology controller setpoint after filter / Tec_ctr set aftFit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2263</td>
<td>Technology controller type / Tec_ctrl type</td>
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</tr>
<tr>
<td>p2264[0...n]</td>
<td>Technology controller actual value / Tec_ctrl act val</td>
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</table>
### List of parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Factory setting</th>
<th>Possible values</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2265</td>
<td>Technology controller actual value filter time constant / Tec_ctrl act T</td>
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</tr>
</tbody>
</table>
VECTOR_G (Tech_ctrl) | Can be changed: U, T | Calculated: - | - | - |
| Data type: FloatingPoint32 | Dynamic index: - | Access level: 2 | Func. diagram: 7958 |
| P-Group: Technology | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min 0.000 [s] | Max 60.000 [s] | Factory setting 0.000 [s] |
| **Description:** | Sets the time constant for the actual value filter (PT1) of the technology controller. |
| r2266 | CO: Technology controller actual value after filter / Tec_ctr act aftFlt | 
VECTOR_G (Tech_ctrl) | Can be changed: - | Calculated: - | - | - |
| Data type: FloatingPoint32 | Dynamic index: - | Access level: 2 | Func. diagram: 7958 |
| P-Group: Technology | Units group: 9_1 | Unit selection: p0595 |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min - [%] | Max - [%] | Factory setting - [%] |
| **Description:** | Displays the smoothed actual value after the filter (PT1) of the technology controller |
| **Dependency:** | Refer to: p2252, p2264, p2265, p2271 |
| **Notice:** | If the actual value exceeds this upper limit, this results in fault F07426. |
| **Note:** | Limiting only active for p2252.3 = 1. |
| p2267 | Technology controller upper limit actual value / Tec_ctrl u_lim act | 
VECTOR_G (Tech_ctrl) | Can be changed: U, T | Calculated: - | - | - |
| Data type: FloatingPoint32 | Dynamic index: - | Access level: 3 | Func. diagram: 7958 |
| P-Group: Technology | Units group: 9_1 | Unit selection: p0595 |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min -10000.00 [%] | Max 10000.00 [%] | Factory setting 200.00 [%] |
| **Description:** | Sets the upper limit for the actual value signal of the technology controller. |
| **Dependency:** | Refer to: F07426 |
| **Notice:** | If the actual value exceeds this upper limit, this results in fault F07426. |
| **Note:** | Limiting only active for p2252.3 = 1. |
| p2268 | Technology controller lower limit actual value / Tec_ctrl l_lim act | 
VECTOR_G (Tech_ctrl) | Can be changed: U, T | Calculated: - | - | - |
| Data type: FloatingPoint32 | Dynamic index: - | Access level: 3 | Func. diagram: 7958 |
| P-Group: Technology | Units group: 9_1 | Unit selection: p0595 |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min -10000.00 [%] | Max 10000.00 [%] | Factory setting -200.00 [%] |
| **Description:** | Sets the lower limit for the actual value signal of the technology controller. |
| **Dependency:** | Refer to: p2252, p2264, p2265, p2271 |
| **Notice:** | If the actual value falls below this lower limit, this results in fault F07426. |
| **Note:** | Limiting only active for p2252.3 = 1. |
### p2269 Technology controller gain actual value / Tech_ctrl gain act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2269</td>
<td>Sets the scaling factor for the actual value of the technology controller.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.00</td>
<td>500.00</td>
<td>100.00 [%]</td>
</tr>
</tbody>
</table>

#### Description:
Sets the scaling factor for the actual value of the technology controller.

#### Dependency:
Refer to: p2264, p2265, p2267, p2268, p2271

#### Note:
For 100%, the actual value is not changed.

### p2270 Technology controller actual value function / Tec_ctr ActVal fct

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2270</td>
<td>Setting to use an arithmetic function for the actual value signal of the technology controller.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Description:
Setting to use an arithmetic function for the actual value signal of the technology controller.

#### Value:
0: No function
1: Root function (root from x)
2: Square function (x * x)
3: Cube function (x * x * x)

#### Dependency:
Refer to: p2264, p2265, p2267, p2268, p2269, p2271

### p2271 Technology controller actual value inversion (sensor type) / Tech_ctrl act inv

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2271</td>
<td>Setting to invert the actual value signal of the technology controller. The inversion depends on the sensor type for the actual value signal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Description:
Setting to invert the actual value signal of the technology controller.

#### Value:
0: No inversion
1: Inversion actual value signal

#### Caution:
If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

#### Note:
The correct setting can be determined as follows:
- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal of the technology controller.
- If the actual value increases as the motor speed increases, then p2271 should be set to 0 (no inversion).
- If the actual value decreases as the motor speed increases, then p2271 should be set to 1 (the actual value signal is inverted).
### List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| r2272        | Technology controller actual value scaled / Tech_ctrl act scal | FloatingPoint32 | - | 2 | 1 | -
| r2273        | Technology controller error / Tec_ctrl error | FloatingPoint32 | - | 2 | 1 | -
| p2274        | Technology controller differentiation, time constant / Tec_ctrl D comp T | FloatingPoint32 | - | 2 | 1 | 0.000 [s] 60.000 [s] 0.000 [s]
| p2280        | Technology controller proportional gain / Tec_ctrl Kp | FloatingPoint32 | - | 2 | 1 | 0.000 1000.000 1.000
| p2285        | Technology controller integral time / Tec_ctrl Tn | FloatingPoint32 | - | 2 | 1 | 0.000 [s] 60.000 [s] 0.000 [s]
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Scaling:</th>
<th>Access level:</th>
<th>Calc. unit:</th>
<th>Dynamic index:</th>
<th>P-group:</th>
<th>Unit selection:</th>
<th>Caution:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2286[n]</td>
<td><strong>BI: Hold technology controller integrator / Tec_ctr integ stop</strong></td>
<td>T</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>CDS, p0170</td>
<td>Technology</td>
<td></td>
<td>-</td>
<td>-</td>
<td></td>
<td>7958</td>
<td></td>
<td></td>
<td>Technology</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description: Sets the signal source to hold the integrator for the technology controller.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>p2289[n]</td>
<td><strong>CI: Technology controller pre-control signal / Tec_ctrl prectrl</strong></td>
<td>U, T</td>
<td>-</td>
<td>2</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>CDS, p0170</td>
<td>Technology</td>
<td></td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>7958</td>
<td></td>
<td></td>
<td>Technology</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description: Sets the signal source for the pre-control signal of the technology controller.</td>
<td></td>
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</tr>
<tr>
<td>p2291</td>
<td><strong>CO: Technology controller maximum limiting / Tec_ctrl max_lim</strong></td>
<td>U, T</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Technology</td>
<td></td>
<td>-200.00 [%]</td>
<td>Max</td>
<td>200.00 [%]</td>
<td>100.00 [%]</td>
<td>7958</td>
<td></td>
<td></td>
<td>Technology</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Description: Sets the maximum limit of the technology controller.</td>
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</tr>
<tr>
<td></td>
<td>Dependency: Refer to: p2292</td>
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<tr>
<td></td>
<td>Caution: The maximum limit must always be greater than the minimum limit (p2291 &gt; p2292).</td>
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<td></td>
</tr>
<tr>
<td>p2292</td>
<td><strong>CO: Technology controller minimum limiting / Tec_ctrl min_lim</strong></td>
<td>U, T</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Technology</td>
<td></td>
<td>-200.00 [%]</td>
<td>Max</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
<td>7958</td>
<td></td>
<td></td>
<td>Technology</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Description: Sets the minimum limit of the technology controller.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Dependency: Refer to: p2291</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Caution: The maximum limit must always be greater than the minimum limit (p2291 &gt; p2292).</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
### Technology controller ramp-up/ramp-down time / Tec_ctr ramp up/dn

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2293</td>
<td>Sets the ramping time for the output signal of the technology controller.</td>
<td>Refer to: p2291, p2292</td>
<td>The time refers to the set maximum and minimum limits (p2291, p2292).</td>
</tr>
</tbody>
</table>

#### Configuration Options

- **Data type:** FloatingPoint32
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 1.00 [s]

### Technology controller output signal / Tec_ctrl outp_sig

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2294</td>
<td>Displays the output signal of the technology controller.</td>
<td>Refer to: p2295</td>
</tr>
</tbody>
</table>

#### Configuration Options

- **Data type:** FloatingPoint32
- **Unit selection:** -
- **Expert list:** 1

### Technology controller output scaling / Tec_ctr outp scal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2295</td>
<td>Sets the scaling for the output signal of the technology controller.</td>
<td>Refer to: p2295</td>
</tr>
</tbody>
</table>

#### Configuration Options

- **Data type:** FloatingPoint32
- **Unit selection:** -
- **Expert list:** 1

### Technology controller output scaling / Tec_ctr outp scal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2296[0...n]</td>
<td>Sets the signal source for the scaling value of the technology controller.</td>
<td>Refer to: p2295</td>
</tr>
</tbody>
</table>

#### Configuration Options

- **Data type:** Unsigned32 / FloatingPoint32
- **Unit selection:** -
- **Expert list:** 1

### Technology controller maximum limit signal source / Tec_ctrMaxLimS_src

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2297[0...n]</td>
<td>Sets the signal source for the maximum limiting of the technology controller.</td>
<td>Refer to: p2291</td>
</tr>
</tbody>
</table>

#### Configuration Options

- **Data type:** Unsigned32 / FloatingPoint32
- **Unit selection:** -
- **Expert list:** 1
### p2298[0...n]

<table>
<thead>
<tr>
<th><strong>CI: Technology controller minimum limit signal source / Tec_ctrl min_l s_s</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>(Tech_ctrl)</strong></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Technology</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the minimum limiting of the technology controller.

**Dependency:** Refer to: p2292

### p2299[0...n]

<table>
<thead>
<tr>
<th><strong>CI: Technology controller limit offset / Tech_ctrl lim offs</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>(Tech_ctrl)</strong></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Technology</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the offset of the output limiting of the technology controller.

### p2306

<table>
<thead>
<tr>
<th><strong>Technology controller fault signal inversion / Tec_ctrl fault inv</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>(Tech_ctrl)</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Technology</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Setting to invert the fault signal of the technology controller.

**The setting depends on the type of control loop.**

**Value:**

- 0: No inversion
- 1: Inversion

**Caution:** If the actual value inversion is incorrectly selected, then the closed-loop control with the technology controller can become unstable and can oscillate!

**Note:**

The correct setting can be determined as follows:

- inhibit the technology controller (p2200 = 0).
- increase the motor speed and in so doing, measure the actual value signal (of the technology controller).
- if the actual value increases with increasing motor speed, then the inversion should be switched out.
- if the actual value decreases with increasing motor speed, then the inversion should be set.

If value = 0:

The drive reduces the output speed when the actual value rises (e.g. for heating fans, intake pump, compressor). If value = 1:

The drive increases the output speed when the actual value increases (e.g. for cooling fans, discharge pumps).

### r2349.0...11

<table>
<thead>
<tr>
<th><strong>CO/BO: Technology controller status word / Tec_ctrl status</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>(Tech_ctrl)</strong></td>
</tr>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>P-Group: Technology</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**Description:** Displays the status word of the technology controller.
### Bit field: Bit Signal name 1 signal 0 signal FP

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Technology controller de-activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Technology controller limited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Technology controller, motorized potentiometer limited max.</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Technology controller, motorized potentiometer limited min.</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Technology controller actual value at the minimum</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Technology controller actual value at the maximum</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Technology controller output at the minimum</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Technology controller output at the maximum</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**p2369 BI: Closed-loop cascade control, control word / Csc_ctrl STW**

**VECTOR_G**

(Tech_ctrl)

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Calculated:** -
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Function:**

**Description:**

Sets the signal source for the selection of the "Switch-in motor" function.

When the function is selected, monitoring of the switches is de-activated with the "bypass" function. This means that the power unit can be connected to other motors via an external control without switch monitoring responding.

**r2700 CO: Reference frequency / f_ref**

**B_INF**

- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Calculated:** -
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Min**
- **Max**

**Dependency:**

Refer to: p2000

**Note:**

This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

**r2700 CO: Reference speed/reference frequency / n_ref/f_ref**

**ENC, VECTOR_G**

- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Calculated:** -
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Min**
- **Max**

**Dependency:**

Refer to: p2000

**Note:**

This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

**Description:**

Display and connector output for the reference quantity for speed and frequency (p2000).

All speeds or frequencies specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

The following applies: Reference frequency (in Hz) = reference speed (in rpm) / 60

This parameter has the unit rpm.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Dependency:</th>
<th>Refer to: p2000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note:</td>
<td>This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for inter-connection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>r2700</strong></th>
<th><strong>CO: Reference velocity/reference frequency actual / v_ref/f_ref act</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC (Lin_enc)</td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Description: | Display and connector output for the actual reference quantity for velocity and frequency. All velocities or frequencies specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). The following applies: Reference frequency (in Hz) = reference velocity (in m/min) / 60 |
| Dependency: | Refer to: p2000 |
| Note: | This BICO parameter provides the numerical value of the reference quantity p2000 as a connector output for inter-connection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication. |

<table>
<thead>
<tr>
<th><strong>r2701</strong></th>
<th><strong>CO: Reference voltage / Reference voltage</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Description: | Connector output of the reference quantity for voltages p2001. All voltages specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). This parameter has the unit Vrms. |
| Dependency: | Refer to: p2001 |
| Note: | This BICO parameter provides the numerical value of the reference quantity p2001 as a connector output for inter-connection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication. |

<table>
<thead>
<tr>
<th><strong>r2702</strong></th>
<th><strong>CO: Reference current / Reference current</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

| Description: | Connector output of the reference quantity for currents p2002. All currents specified as relative value are referred to this reference quantity. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). This parameter has the unit Arms. |
| Dependency: | Refer to: p2002 |
| Note: | This BICO parameter provides the numerical value of the reference quantity p2002 as a connector output for inter-connection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication. |
r2703 CO: Reference torque / Reference torque
VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting

Description: Connector output of the reference quantity p2003 for torque (r0108.12 = 0) or force (r0108.12 = 1).
All torques specified as relative values (r0108.12 = 0) or forces (r0108.12 = 1) are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The unit of this parameter is the same as the unit selected for p2003.
Dependency: p0505, r0108.12
Refer to: p2003
Note: This BICO parameter provides the numerical value of the reference quantity p2003 in the currently selected unit as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

r2704 CO: Reference power / Reference power
B_INF, VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting

Description: Connector output of the reference quantity for powers p2004.
All power ratings specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The unit of this parameter is the same as the unit selected for p2004.
Dependency: This value is calculated as voltage x current for the infeed and as torque x speed for closed-loop controls.
Refer to: p2004
Note: This BICO parameter provides the numerical value of the reference quantity p2004 in the currently selected unit as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.
The reference power is calculated as follows:
- 2 * Pi * reference speed / 60 * reference torque (motor)
- reference voltage * reference current * root(3) (infeed)

r2705 CO: Reference angle / Reference angle
B_INF, VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting

Description: Connector output of the reference quantity for angles p2005.
All angles specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
This parameter has the unit degree.
Dependency: Refer to: p2005
Parameters
List of parameters

Note:
This BICO parameter provides the numerical value of the reference quantity p2005 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

r2706
CO: Reference temp / Reference temp

<table>
<thead>
<tr>
<th>B_INF, TM150, TM31, VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Connector output of the reference quantity for temperatures.
All temperatures specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
This parameter has the unit degree Celsius.

Note:
This BICO parameter provides the numerical value of the reference quantity for the temperature as a connector output for interconnection with Drive Control Chart (DCC). The numerical value can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

r2707
CO: Reference acceleration / Ref accel

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
All acceleration rates specified as relative value are referred to this reference quantity.
The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
The unit of this parameter is the same as the unit selected for p2007.

Dependency:
r0108.12, p0505
Refer to: p2007

Note:
This BICO parameter provides the numerical value of the reference quantity p2007 as a connector output for interconnection with Drive Control Chart (DCC). The numerical value in the currently selected unit can be adopted unchanged from this connector output in DCC. This BICO parameter is not suitable for interconnecting for cyclic communication.

p2720[0...n] Load gear configuration / Load gear config

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(1, 4)</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: -</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0000 bin</td>
</tr>
</tbody>
</table>

Description:
Sets the configuration for position tracking of a load gear.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Load gear, activate position tracking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Axis type</td>
<td>Linear axis</td>
<td>Rotary axis</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Load gear, reset position</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
For the following events, the non-volatile, saved position values are automatically reset:
- when an encoder replacement has been identified.
- when changing the configuration of the Encoder Data Set (EDS).
- when adjusting the absolute encoder again
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2721[0...n]</td>
<td>Load gear, rotary absolute encoder, revolutions, virtual / Abs rot rev</td>
<td>Sets the number of rotations that can be resolved for a rotary absolute encoder with activated position tracking of the load gear.</td>
<td>The resolution that is set must be able to be represented using r2723. For rotary axes/modulo axes, the following applies: This parameter is pre-set with p0421 and can be changed. For linear axes, the following applies: This parameter is pre-assigned with p0421, expanded by 6 bits for multiturn information (maximum number of over-flows) and cannot be changed.</td>
</tr>
<tr>
<td>p2722[0...n]</td>
<td>Load gear, position tracking tolerance window / Pos track tol</td>
<td>Sets a tolerance window for position tracking. After the system is powered up, the difference between the saved position and the actual position is determined, and depending on this, the following is initiated: Difference within the tolerance window --&gt; The position is reproduced as a result of the encoder actual value. Difference outside the tolerance window --&gt; An appropriate message is output.</td>
<td>The value is entered in integer (complete) encoder pulses. For p2720.0 = 1, the value is automatically pre-assigned quarter of the encoder range. Example: Quarter of the encoder range = (p0408 * p0421) / 4 It is possible that the tolerance window may not be able to be precisely set due to the data type (floating point number with 23 bit mantissa).</td>
</tr>
<tr>
<td>r2723[0...n]</td>
<td>CO: Load gear absolute value / Load gear abs_val</td>
<td>Displays the absolute value after the load gear.</td>
<td>The encoder position actual value must be requested using the encoder control word Gn_STW.13. The increments are displayed in the format the same as r0483.</td>
</tr>
</tbody>
</table>
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Bit field</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2724[n]</td>
<td>CO: Load gear position difference / Load gear pos diff</td>
<td>Integer32</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>p2810[0...1]</td>
<td>BI: AND logic operation inputs / AND inputs</td>
<td>Unsigned32 / Binary</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>r2811.0</td>
<td>CO/BO: AND logic operation result / AND result</td>
<td>Unsigned32</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>p2816[0...1]</td>
<td>BI: OR logic operation inputs / OR inputs</td>
<td>Unsigned32 / Binary</td>
<td>2</td>
<td>-</td>
</tr>
</tbody>
</table>

### r2724[n] Parameters

- **Data type:** Integer32
- **Dynamic index:** DDS, p0180
- **Units group:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** -

### p2810[0...1] Parameters

- **Data type:** Unsigned32 / Binary
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 0

### r2811.0 Parameters

- **Data type:** Unsigned32
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** -

### p2816[0...1] Parameters

- **Data type:** Unsigned32 / Binary
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 0

### Notes

- The increments are displayed in the same format as for r0483/r2723.
- If the measuring gear of the motor encoder is not activated, the position difference should be read in encoder increments.
- If the measuring gear of the motor encoder is activated, the position difference is converted using the measuring gear factor.

- Sets the signal sources for the inputs of the AND logic operation.
- Sets the signal sources for the inputs of the OR logic operation.
- Sets the signal sources for the inputs of the OR logic operation.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2817.0</td>
<td>CO/BO: OR logic operation result / OR result</td>
<td>Displays the result of the OR logic operation.</td>
<td>p2816</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint)</td>
</tr>
<tr>
<td>p2900[0...n]</td>
<td>CO: Fixed value 1 [%] / Fixed value 1 [%]</td>
<td>Sets a fixed percentage.</td>
<td>p2901, p2930</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint)</td>
</tr>
<tr>
<td>p2901[0...n]</td>
<td>CO: Fixed value 2 [%] / Fixed value 2 [%]</td>
<td>Sets a fixed percentage.</td>
<td>p2900, p2930</td>
<td>A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set. The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint)</td>
</tr>
<tr>
<td>r2902[0...14]</td>
<td>CO: Fixed values [%] / Fixed values [%]</td>
<td>Signal sources for frequently used percentage values.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description:
- Displays the result of the OR logic operation.
- Sets a fixed percentage.
- Signal sources for frequently used percentage values.

### Bit field:
- Bit 00: OR logic operation result
- Bit 01: Fixed value 1 [%]
- Bit 02: Fixed value 2 [%]
- Bit 03: Fixed value 3 [%]
- Bit 04: Fixed value 4 [%]
- Bit 05: Fixed value 5 [%]
- Bit 06: Fixed value 6 [%]
- Bit 07: Fixed value 7 [%]
- Bit 08: Fixed value 8 [%]
- Bit 09: Fixed value 9 [%]
- Bit 10: Fixed value 10 [%]
- Bit 11: Fixed value 11 [%]
- Bit 12: Fixed value 12 [%]
- Bit 13: Fixed value 13 [%]
- Bit 14: Fixed value 14 [%]

### Notice:
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
- A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.
- The value can be used to interconnect a scaling function (e.g. scaling of the main setpoint).
- The value can be used to interconnect a scaling function (e.g. scaling of the supplementary setpoint).

### Index:
- [0] = Fixed value +0 %
- [1] = Fixed value +5 %
- [2] = Fixed value +10 %
- [3] = Fixed value +20 %
- [4] = Fixed value +50 %
- [5] = Fixed value +100 %
- [6] = Fixed value +150 %
- [7] = Fixed value +200 %
- [8] = Fixed value -5 %
Parameters

List of parameters

[9] = Fixed value -10 %
[10] = Fixed value -20 %
[12] = Fixed value -100 %
[13] = Fixed value -150 %
[14] = Fixed value -200 %

Dependency:
Refer to: p2900, p2901, p2930

Note:
The signal sources can, for example, be used to interconnect scalings.

**p2930[0...n]**

**CO: Fixed value M [Nm] / Fixed value M [Nm]**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
<td><strong>Func. diagram:</strong> 1021</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Free function blocks</td>
<td><strong>Units group:</strong> 7_1</td>
<td><strong>Unit selection:</strong> p0505</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
<td><strong>Scaling:</strong> p2003</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-100000.00 [Nm]</td>
<td>100000.00 [Nm]</td>
<td>0.00 [Nm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets a fixed value for torque.

**Dependency:**
Refer to: p2900, p2901

**Note:**
A BICO interconnection to a parameter that belongs to a drive data set always acts on the effective data set.

**p3100**

**RTC time stamp mode / RTC t_stamp mode**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode for the time stamp
p3100 = 0: Time stamp, operating hours
p3100 = 1: Time stamp, UTC format

**Note:**
RTC: Real-time clock
UTC: Universal Time Coordinates

The UTC time started, according to the definition on 01.01.1970 at 00:00:00 and is output in days and milliseconds.

**p3101[0...1]**

**RTC set UTC time / RTC set UTC**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 0</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4294967295</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting the UTC time.
This means that the drive system is synchronized to the time specified by the time master.
To start p3101[1] must be written to followed by p3101[0]. After writing to p3101[0], the UTC time is accepted.
p3101[0]: Milliseconds
p3101[1]: Days
### r3102[0...1] RTC read UTC time / RTC read UTC

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned32</td>
<td>Displays the actual UTC time in the drive system.</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Function Diagram</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Unit selection</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Expert list</strong></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### p3103 RTC synchronization source / RTC sync_source

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Integer16</td>
<td>Sets the synchronization source/technique.</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Function Diagram</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Unit selection</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Expert list</strong></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### p3104 BI: RTC real time synchronization PING / RTC PING

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned32 / Binary</td>
<td>Sets the signal source for the PING event to set the UTC time. The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Function Diagram</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Unit selection</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Expert list</strong></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### r3107[0...3] RTC synchronizing time / RTC t_sync

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned32</td>
<td>Displays the last synchronizing event in the drive system.</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Function Diagram</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Units group</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Unit selection</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Expert list</strong></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### r3108[0...1]

**RTC last synchronization deviation / RTC sync_dev**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3108[0]</td>
<td>Displays the absolute value of the last synchronization deviation that was determined.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r3108[1]</td>
<td>Days</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

**Can be changed:** -  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Unit selection:** -

**P-Group:** -  
**Units group:** -

**Not for motor type:** -  
**Scaling:** -

**Min:** 0  
**Max:** 1000 |

### p3109

**RTC real time synchronization, tolerance window / RTC sync tol**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3109[0]</td>
<td>Sets the tolerance window for time synchronization. When this tolerance window is exceeded, an appropriate alarm is output.</td>
<td>0 [ms]</td>
<td>1000 [ms]</td>
<td>100 [ms]</td>
</tr>
</tbody>
</table>

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Unit selection:** -

**P-Group:** -  
**Units group:** -

**Not for motor type:** -  
**Scaling:** -

**Min:** 0  
**Max:** 1000 |

**Dependency:** Refer to: A01099

### p3110

**External fault 3, power-up delay / Ext fault 3 t_on**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3110[0]</td>
<td>Sets the delay time for external fault 3.</td>
<td>0 [ms]</td>
<td>1000 [ms]</td>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**All objects**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Unit selection:** -

**P-Group:** Messages  
**Units group:** -

**Not for motor type:** -  
**Scaling:** -

**Min:** 0  
**Max:** 1000 |

**Dependency:** Refer to: p2108, p3111, p3112  
Refer to: F07862

### p3111[0...n]

**BI: External fault 3, enable / Ext fault 3 enab**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3111[0]</td>
<td>Sets the signal source for the enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation: - BI: p2108 negated - BI: p3111 - BI: p3112 negated</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**B_INF, VECTOR_G**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned32 / Binary  
**Dynamic index:** CDS, p0170  
**Unit selection:** -

**P-Group:** Messages  
**Units group:** -

**Not for motor type:** -  
**Scaling:** -

**Min:** -  
**Max:** |

**Dependency:** Refer to: p2108, p3110, p3112  
Refer to: F07862
## List of parameters

### p3111

<table>
<thead>
<tr>
<th>p3111</th>
<th>BI: External fault 3, enable / Ext fault 3 enab</th>
</tr>
</thead>
</table>
Data type: Unsigned32 / Binary  
P-Group: Messages  
Not for motor type: - |

**Description:**
Sets the signal source for the enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

**Dependency:**
Refer to: p2108, p3110, p3112  
Refer to: F07862

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

### p3112

<table>
<thead>
<tr>
<th>p3112</th>
<th>BI: External fault 3 enable negated / Ext flt 3 enab neg</th>
</tr>
</thead>
</table>
| B_INF, VECTOR_G | Can be changed: U, T  
Data type: Unsigned32 / Binary  
P-Group: Messages  
Not for motor type: - |

**Description:**
Sets the signal source for the negated enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

**Dependency:**
Refer to: p2108, p3110, p3111  
Refer to: F07862

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### p3112[0...n]

<table>
<thead>
<tr>
<th>p3112[0...n]</th>
<th>BI: External fault 3 enable negated / Ext flt 3 enab neg</th>
</tr>
</thead>
</table>
|               | Can be changed: U, T  
Data type: Unsigned32 / Binary  
P-Group: Messages  
Not for motor type: - |

**Description:**
Sets the signal source for the negated enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation:
- BI: p2108 negated
- BI: p3111
- BI: p3112 negated

**Dependency:**
Refer to: p2108, p3110, p3111  
Refer to: F07862
### Parameters

**List of parameters**

---

#### r3113.0...15  
**CO/BO: NAMUR message bit bar / NAMUR bit bar**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>Fault drive converter data electronics / software error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>01</td>
<td>Network fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>02</td>
<td>DC link overvoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>03</td>
<td>Fault drive converter power electronics</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>04</td>
<td>Drive converter overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>05</td>
<td>Ground fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>06</td>
<td>Motor overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>07</td>
<td>Bus error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>08</td>
<td>External safety-relevant shutdown</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>09</td>
<td>Mot encoder fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Error communication internal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Fault infeed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Other faults</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the status of NAMUR signal bit bar. The faults or alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

#### r3114.9...11  
**CO/BO: Messages status word global / Msg ZSW global**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>09</td>
<td>09</td>
<td>Group alarm present</td>
<td>Yes</td>
<td>No</td>
<td>8065</td>
</tr>
<tr>
<td>10</td>
<td>10</td>
<td>Group fault present</td>
<td>Yes</td>
<td>No</td>
<td>8060</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Safety group message present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the global status word for messages. The appropriate bit is set if at least one message is present at the drive objects.

#### r3115[0...63]  
**Fault drive object initiating / F DO initiating**

**Description:**
Displays the drive object number of the initiating drive object for this fault as integer number.

**Value:** 63
The fault was initiated by the drive object itself.

**Dependency:**
Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122

**Note:**
The buffer parameters are cyclically updated in the background (refer to status signal in r2139). The structure of the fault buffer and the assignment of the indices is shown in r0945.
### p3116

**Description:**
Sets the signal source for the automatic acknowledgement on the device drive object.

- **BI: p3116 = 0** signal
  - Faults present are automatically acknowledged on the device drive object. Local device faults are forwarded to the first active drive object.
- **BI: p3116 = 1** signal
  - Faults present are not automatically acknowledged on the device drive object. Local device faults are not forwarded.

**Dependency:**
Refer to: p2102, p2103, p2104, p2105, p3981

**Note:**
When selecting a standard telegram, the BICO interconnection for control signal STW1.10 (master control by PLC) is automatically established.

### p3117

**Description:**
Sets the re-parameterization of all safety messages for faults and alarms.

- **0:** Safety messages are not re-parameterized
- **1:** Safety messages are re-parameterized

**Note:**
A change only becomes effective after a POWER ON.

### r3120[0...63]

**Description:**
Displays the component number of the fault which has occurred.

**Dependency:**
Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3122

**Note:**
Value = 0: Assignment to a component not possible.

The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

The structure of the fault buffer and the assignment of the indices is shown in r0945.

### r3121[0...63]

**Description:**
Displays the component number of the alarm which has occurred.
**Dependency:**
Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3123

**Note:**
Value = 0: Assignment to a component not possible.
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

---

### r3122[0...63] Diagnostic attribute fault / Diag_attr fault

**All objects**
Can be changed: -
Data type: Unsigned32
P-Group: Messages
Not for motor type: -
Min

**Description:**
Displays the diagnostic attribute of the fault which has occurred.

**Bit field:**
Bit | Signal name | 1 signal | 0 signal | FP
---|-------------|----------|----------|---
00 | Hardware replacement recommended | Yes | No | -

**Dependency:**
Refer to: r0945, r0947, r0948, r2109, r2130, r2133, r2136, r3120

**Note:**
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the fault buffer and the assignment of the indices is shown in r0945.

---

### r3123[0...63] Diagnostic attribute alarm / Diag_attr alarm

**All objects**
Can be changed: -
Data type: Unsigned32
P-Group: Messages
Not for motor type: -
Min

**Description:**
Displays the diagnostic attribute of the alarm which has occurred.

**Bit field:**
Bit | Signal name | 1 signal | 0 signal | FP
---|-------------|----------|----------|---
00 | Hardware replacement recommended | Yes | No | -

**Dependency:**
Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3121

**Note:**
The buffer parameters are cyclically updated in the background (refer to status signal in r2139).
The structure of the alarm buffer and the assignment of the indices is shown in r2122.

---

### r3131 CO: Actual flt value / Actual flt value

**All objects**
Can be changed: -
Data type: Integer32
P-Group: Messages
Not for motor type: -
Min

**Description:**
Displays the fault value of the oldest active fault.

**Dependency:**
Refer to: r2131, r3132

---

### r3132 CO: Actual component number / Act comp_no.

**All objects**
Can be changed: -
Data type: Integer32
P-Group: Messages
Not for motor type: -
Min

**Description:**
Displays the component number of the oldest fault that is still active.

**Dependency:**
Refer to: r2131, r3131
### List of parameters

#### Description:
Sets the suppression of r2139.3 "Fault present" for certain fault responses.

#### Dependency:
Refer to: p0491, r2139

#### Note:
Depending on the suppression of a fault reaction in this parameter, r2139.1 "Acknowledgement required" is set when at least one fault occurs.

**Re bit 08:**
The suppression is only effective if p0491 = 1.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>p3135</td>
<td>Suppress active fault / Supp act flt</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
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</tr>
<tr>
<td>p3201[0...n]</td>
<td>Excitation current outside the tolerance threshold value / I_exc n Tol thresh</td>
<td>U, T</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
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<tr>
<td>p3202[0...n]</td>
<td>Excitation current outside the tolerance hysteresis / I_exc n Tol hyst</td>
<td>U, T</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
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</tr>
<tr>
<td>p3203[0...n]</td>
<td>Excitation current outside the tolerance delay time / I_exc n Tol t_del</td>
<td>U, T</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
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<tr>
<td>Parameter</td>
<td>Description</td>
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<tr>
<td><strong>p3204[0...n]</strong></td>
<td><strong>Flux outside the tolerance threshold value / Flux n tol thresh</strong></td>
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<td></td>
<td>Sets the threshold value for the &quot;flux outside the tolerance&quot; message for the flux monitoring.</td>
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<tr>
<td></td>
<td>If the absolute value of the difference between the flux setpoint and actual value (r0083 - r0084) falls below the threshold value with hysteresis longer than the selected delay time, then fault F07914 is output.</td>
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<tr>
<td></td>
<td>This fault is withdrawn when the threshold voltage is undershot.</td>
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<tr>
<td></td>
<td>Refer to: r0083, r0084, p3205, p3206</td>
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<td>Note: The monitoring function is only carried out for separately-excited synchronized motors (p0300 = 5).</td>
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<tr>
<td><strong>p3205[0...n]</strong></td>
<td><strong>Flux outside the tolerance hysteresis / Flux n tol hyst</strong></td>
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<td></td>
<td>Sets the hysteresis for the &quot;flux outside tolerance&quot; message for the flux monitoring.</td>
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<tr>
<td><strong>p3206[0...n]</strong></td>
<td><strong>Flux outside tolerance delay time / Flux n tol t_del</strong></td>
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<td>Sets the delay time for the &quot;flux outside tolerance&quot; message for the flux monitoring.</td>
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</table>
### p3207[0...n] Zero current signal threshold value / I_0_sig thresh

**VECTOR_G**

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<th>Calculated:</th>
<th>Access level:</th>
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<tr>
<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Units group: 6_2</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the threshold value for the zero current signal for the zero current monitoring.
If the absolute current falls below the threshold value then r2199.6 is set to 1 after the delay time has expired. The bit is reset if the threshold value and the hysteresis are exceeded again.

**Dependency:**
Refer to: r2199, p3208, p3209

**Note:**
The monitoring function is only carried out for separately-excited synchronized motors (p0300 = 5). The monitoring is only carried out for speeds less than the speed threshold value in p2161 (r2199.0 = 1).

**Min**
0.01 [Arms]

**Max**
10000.00 [Arms]

**Factory setting**
1.00 [Arms]

### p3208[0...n] Zero current signal hysteresis / I_0_sig hyst

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
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<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Units group: 6_2</td>
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</table>

**Description:**
Sets the hysteresis for the zero current signal for the zero current monitoring.

**Dependency:**
Refer to: p3207, p3209

**Note:**
The monitoring function is only carried out for separately-excited synchronized motors (p0300 = 5). The monitoring is only carried out for speeds less than the speed threshold value in p2161 (r2199.0 = 1).

**Min**
0.01 [Arms]

**Max**
10000.00 [Arms]

**Factory setting**
1.00 [Arms]

### p3209[0...n] Zero current signal delay time / I_0_sig t_del

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
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<th>Access level:</th>
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<tr>
<td>Not for motor type:</td>
<td>ASM, PEM, REL</td>
<td>Units group: -</td>
<td></td>
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</tbody>
</table>

**Description:**
Sets the delay time for the zero current signal for the zero current monitoring.

**Dependency:**
Refer to: p3207, p3208

**Note:**
The monitoring function is only carried out for separately-excited synchronized motors (p0300 = 5). The monitoring is only carried out for speeds less than the speed threshold in p2161 (r2199.0 = 1).

**Min**
0.00 [s]

**Max**
10.00 [s]

**Factory setting**
0.02 [s]

### p3233[0...n] Torque actual value filter, time constant / M_act_filt T

**VECTOR_G (Ext msg)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
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<td>P-Group:</td>
<td>Messages</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Units group: -</td>
<td></td>
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</tbody>
</table>

**Description:**
Sets the time constant for the PT1 element to smooth the torque actual value.
The smoothed torque actual value is compared with the threshold values and is only used for messages and signals.
### p3235 Phase failure signal motor monitoring time / Ph_fail t_monit

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 4

**Data type:** FloatingPoint32

**Dynamic index:** -

**P-Group:** Messages

**Units group:** -

**Exp. list:** 1

**Min**   **Max**
0 [ms]   2000 [ms] 320 [ms]

**Description:**
Sets the monitoring time for phase failure detection of the motor.

**Notice:**
After the value has been modified, no further parameter modifications can be made and the status is shown in r3996. Modifications can be made again when r3996 = 0.

**Note:**
Monitoring is only effective for blocksize and booksize power units.
For p3235 = 0 the function is deactivated.
For VECTOR, the following applies:
The monitoring is automatically de-activated during the flying restart operation for a motor that is still rotating.

### p3236[0...n] Speed threshold 7 / n_thresh val 7

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_LIM_REF
- **Access level:** 3

**Data type:** FloatingPoint32

**Dynamic index:** DSS, p0180

**P-Group:** Messages

**Units group:** 3_1

**Exp. list:** 1

**Min**   **Max**
0.00 [rpm] 3000.00 [rpm] 100.00 [rpm]

**Description:**
Sets the speed threshold value for the signal "speed deviation model/external" (BO: r2199.7).

**Dependency:**
Refer to: r1443, r2169, r2199, p3237

### p3237[0...n] Hysteresis speed 7 / n_hysteresis 7

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_LIM_REF
- **Access level:** 3

**Data type:** FloatingPoint32

**Dynamic index:** DSS, p0180

**P-Group:** Messages

**Units group:** 3_1

**Exp. list:** 1

**Min**   **Max**
0.00 [rpm] 200.00 [rpm] 2.00 [rpm]

**Description:**
Sets the hysteresis speed for the signal "speed deviation model/external" (BO: r2199.7).

**Dependency:**
Refer to: r2199, p3236

### p3238[0...n] OFF delay n_act_motor model = n_act external / t_del n_a = n_ext

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3

**Data type:** FloatingPoint32

**Dynamic index:** DSS, p0180

**P-Group:** Messages

**Units group:** -

**Exp. list:** 1

**Min**   **Max**
0.0 [s]   100.0 [s] 3.0 [s]

**Description:**
Sets the OFF delay for the signal "speed deviation model/external in tolerance" (BO: r2199.7).
The smoothed actual speed of the motor model r2169 is compared with the speed measured externally r1443 (threshold value p3236).

**Dependency:**
Refer to: p3236, p3237
### p3320[0...n]
**Fluid flow machine power point 1 / Fluid_mach P1**

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<tr>
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<td>Displays, signals</td>
<td>Units group:</td>
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<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
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</table>

**Min**
- 0.00

**Max**
- 100.00

**Factory setting**
- 25.00

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required.
This parameter specifies the power ($P$) of point 1 as a [%].
The characteristic comprises the following value pairs:
- Power ($P$) / speed ($n$)
  - $p3320 / p3321$ --> point 1 ($P1 / n1$)
  - $p3322 / p3323$ --> point 2 ($P2 / n2$)
  - $p3324 / p3325$ --> point 3 ($P3 / n3$)
  - $p3326 / p3327$ --> point 4 ($P4 / n4$)
  - $p3328 / p3329$ --> point 5 ($P5 / n5$)

**Dependency:**
Refer to: r0041, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3321[0...n]
**Fluid flow machine speed point 1 / Fluid_mach n1**

<table>
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<th>U, T</th>
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<td>P-Group:</td>
<td>Displays, signals</td>
<td>Units group:</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
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</table>

**Min**
- 0.00

**Max**
- 100.00

**Factory setting**
- 0.00

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required.
This parameter specifies the speed ($n$) of point 1 as a [%].
The characteristic comprises the following value pairs:
- Power ($P$) / speed ($n$)
  - $p3320 / p3321$ --> point 1 ($P1 / n1$)
  - $p3322 / p3323$ --> point 2 ($P2 / n2$)
  - $p3324 / p3325$ --> point 3 ($P3 / n3$)
  - $p3326 / p3327$ --> point 4 ($P4 / n4$)
  - $p3328 / p3329$ --> point 5 ($P5 / n5$)

**Dependency:**
Refer to: r0041, p3320, p3322, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3322[0...n]
**Fluid flow machine power point 2 / Fluid_mach P2**

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<td>Units group:</td>
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<td>Unit selection:</td>
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<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
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</table>

**Min**
- 0.00

**Max**
- 100.00

**Factory setting**
- 50.00

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic $P = f(n)$ with 5 points along the characteristic is required.
This parameter specifies the power ($P$) of point 2 as a [%].

### Parameters

**List of parameters**

**Dependency:** Refer to: r0041, p3320, p3321, p3323, p3324, p3325, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
- The energy saved is displayed in r0041.

<table>
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<th>Description</th>
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<td>Unit selection: -</td>
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<tr>
<td></td>
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<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td><strong>p3324[0...n]</strong></td>
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**Description:**
- For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.
- This parameter specifies the speed \( n \) of point 2 as a [%].

**Dependency:** Refer to: r0041, p3320, p3321, p3322, p3324, p3325, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
- The energy saved is displayed in r0041.

**Description:**
- For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.
- This parameter specifies the power \( P \) of point 3 as a [%].

**Dependency:** Refer to: r0041, p3320, p3321, p3322, p3323, p3325, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
- The energy saved is displayed in r0041.

**Description:**
- For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.
- This parameter specifies the speed \( n \) of point 3 as a [%].

**Dependency:** Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3326, p3327, p3328, p3329

**Note:**
- The reference value for power and speed is the rated power/rated speed.
- The energy saved is displayed in r0041.
### p3326[0...n]
**Fluid flow machine power point 4 / Fluid_mach P4**

| VECTOR_G | Can be changed: | U, T | Calculated: | - | Access level: | 2 |
| - | Data type: | FloatingPoint32 | Dynamic index: | DDS, p0180 | Func. diagram: | - |
| - | P-Group: | Displays, signals | Units group: | - | Unit selection: | - |
| - | Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting |
| 0.00 | 100.00 | 92.00 |

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the power \( P \) of point 4 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3327, p3328, p3329

**Note:**
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3327[0...n]
**Fluid flow machine speed point 4 / Fluid_mach n4**

| VECTOR_G | Can be changed: | U, T | Calculated: | - | Access level: | 2 |
| - | Data type: | FloatingPoint32 | Dynamic index: | DDS, p0180 | Func. diagram: | - |
| - | P-Group: | Displays, signals | Units group: | - | Unit selection: | - |
| - | Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting |
| 0.00 | 100.00 | 75.00 |

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the speed \( n \) of point 4 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3328, p3329

**Note:**
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3328[0...n]
**Fluid flow machine power point 5 / Fluid_mach P5**

| VECTOR_G | Can be changed: | U, T | Calculated: | - | Access level: | 2 |
| - | Data type: | FloatingPoint32 | Dynamic index: | DDS, p0180 | Func. diagram: | - |
| - | P-Group: | Displays, signals | Units group: | - | Unit selection: | - |
| - | Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting |
| 0.00 | 100.00 | 100.00 |

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the power \( P \) of point 5 as a [%].

**Dependency:**
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3329

**Note:**
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

### p3329[0...n]
**Fluid flow machine speed point 5 / Fluid_mach n5**

| VECTOR_G | Can be changed: | U, T | Calculated: | - | Access level: | 2 |
| - | Data type: | FloatingPoint32 | Dynamic index: | DDS, p0180 | Func. diagram: | - |
| - | P-Group: | Displays, signals | Units group: | - | Unit selection: | - |
| - | Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting |
| 0.00 | 100.00 | 100.00 |

**Description:**
For the energy-saving display of a fluid-flow machine, a typical flow characteristic \( P = f(n) \) with 5 points along the characteristic is required.

This parameter specifies the speed \( n \) of point 5 as a [%].
Parameters
List of parameters

Dependency:
Refer to: r0041, p3320, p3321, p3322, p3323, p3324, p3325, p3326, p3327, p3328

Note:
The reference value for power and speed is the rated power/rated speed.
The energy saved is displayed in r0041.

r3402 Infeed status internal BIC / INF state int

- B_INF
  Can be changed: -
  Calculated: -
  Access level: 2
  Data type: Integer16
  Dynamic index: -
  Func. diagram: 8932
  P-Group: Closed-loop control
  Units group: -
  Unit selection: -
  Not for motor type: -
  Scaling: -
  Expert list: 1
  Min 0
  Max 6
  Factory setting -

- Description:
  Displays the internal status of the infeed module.

- Value:
  0: Initialization
  1: Fault
  2: No ON command
  3: Offset measurement running
  4: ON delay active
  5: Precharg. running
  6: Operation

r3405.7 CO/BO: Infeed status word / Inf ZSW

- B_INF
  Can be changed: -
  Calculated: -
  Access level: 2
  Data type: Unsigned16
  Dynamic index: -
  Func. diagram: -
  P-Group: Closed-loop control
  Units group: -
  Unit selection: -
  Not for motor type: -
  Scaling: -
  Expert list: 1
  Min -
  Max -
  Factory setting -

- Description:
  Displays the status word of the infeed.

- Bit field:
  Bit Signal name
  07 DC link undervoltage alarm threshold
  undershot

r3405.1...8 CO/BO: Status word DC-link control / UDC ZSW

- VECTOR_G (Tech_ctrl)
  Can be changed: -
  Calculated: -
  Access level: 2
  Data type: Unsigned16
  Dynamic index: -
  Func. diagram: -
  P-Group: Closed-loop control
  Units group: -
  Unit selection: -
  Not for motor type: -
  Scaling: -
  Expert list: 1
  Min -
  Max -
  Factory setting -

- Description:
  Displays the status word for DC-link voltage control.

- Bit field:
  Bit Signal name
  01 Vdc-ctrl active
  08 Vdc controller selected

- Note:
  Re bit 01:
  DC-link voltage control is disabled and enabled with p3513.
  Re bit 08 = 1:
  DC-link voltage control is selected using p3513.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3422</td>
<td>DC-link capacitance, total / C_DC tot</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Sets the total DC link capacitance for closed-loop voltage control.</td>
<td>0.20 [mF]</td>
<td>2000.00 [mF]</td>
<td>2.00 [mF]</td>
</tr>
</tbody>
</table>

**Note:**
The capacitance of one power unit is pre-assigned to this value. The value should be adapted according to the number of power units.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3490</td>
<td>Infeed delay time OFF1 command / INF t_del OFF1</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Sets the delay time for the ON/OFF1 command of the infeed.</td>
<td>0.0 [ms]</td>
<td>1000000.0 [ms]</td>
<td>0.0 [ms]</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0840

**Notice:**
The ON/OFF1 command of the infeed can be interrupted.

**Note:**
This parameter is only relevant if a Motor Module and the infeed are controlled by the same OFF command. In this case, the delay time and the stop ramp time of the motor can be coordinated with one another.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3510</td>
<td>DC link voltage setpoint / Vdc setp</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Closed-loop control</td>
<td>Units group: 5_2</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: p2001</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Sets the setpoint for the DC-link voltage on the motor side.</td>
<td>100.00 [V]</td>
<td>1600.00 [V]</td>
<td>600.00 [V]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3511</td>
<td>CI: DC-link voltage supplementary setpoint / Vdc Z_set</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: p2001</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Sets the signal source for the supplementary setpoint for the DC-link voltage on the motor side.</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p3510
### List of parameters

**p3513**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI: Inhibit voltage-controlled operation / Inhib U_ctrl mode</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**r3517**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO: DC-link controller active current setpoint / Vdc I_act set</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: 6_2</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2002</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>- [Arms]</td>
<td>- [Arms]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p3520[0...3]**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cl: DC link pre-control power / Vdc pre-ctrl P</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>-100000.00000 [%]</td>
<td>100000.00000 [%]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p3521[0...3]**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC link pre-control power scaling / Vdc prectrl P scal</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Units group: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>-100.00000 [%]</td>
<td>100.00000 [%]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p3523[0...3]**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC link pre-control power smoothing / Vdc pre-ctrl P sm</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling:</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>1000 [ms]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Closed-loop control of the DC link voltage is improved by pre-controlling the power required for the other modules. A non-scaled quantity is expected so that the various power reference values (r2004) of the drive objects do not have to be taken into account. The scaling factors are used to adapt the scaling (p3521).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3554</td>
<td>Vdc controller integral component / Vdc_ctrl I_comp</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>p3560</td>
<td>Vdc controller proportional gain / Vdc_ctrl Kp</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>p3562</td>
<td>Vdc controller integral time / Vdc_ctrl Tn</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>p3660[0...n]</td>
<td>VSM input line supply voltage, voltage scaler / VSM inp U_scaler</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**r3554**

| Data type: | FloatingPoint32 |
| P-Group: | Closed-loop control |
| Min | - [Arms] |
| Max | - [Arms] |

**p3560**

| Data type: | FloatingPoint32 |
| P-Group: | Closed-loop control |
| Min | 0.01 [%] |
| Max | 1000.00 [%] |

**p3562**

| Data type: | FloatingPoint32 |
| P-Group: | Closed-loop control |
| Min | 0.10 [%] |
| Max | 100000.00 [%] |

**p3660[0...n]**

| Data type: | FloatingPoint32 |
| P-Group: | Closed-loop control |
| Min | 0.00 [%] |
| Max | 100000.00 [%] |

### Notes

- **p3554**
  - Displays the integral action component of the DC link voltage controller (Vdc controller).
  - A value of 100% corresponds to the basic setting derived from the loop control parameter (p3422).

- **p3560**
  - Sets the scaled proportional gain for the DC link voltage controller (Vdc controller).
  - A value of 100% corresponds to the basic setting derived from the loop control parameter (p3422).

- **p3562**
  - Sets the scaled integral time for the DC link voltage controller (Vdc).
  - A value of 100% corresponds to the basic setting derived from the loop control parameter (p3422).

- **p3660[0...n]**
  - Sets the voltage scaler for the Voltage Sensing Module (VSM).

**Example**

- When the 690 V input is used (X522) without voltage scaler, 0 % should be entered.
- When the 100 V input (X521) is used with voltage scaler to measure medium voltages, the dividing (scaling) factor multiplied by 100% should be entered.

Example:

- 1000 V line supply voltage, voltage scaling, 10:1
  - voltage at the VSM input is 100 V
  - p3660 = 10 * 100 % = 1000 %
### r3661[0...n]

**Description:**
Displays the input voltage between phases L1 and L2 for the Voltage Sensing Module (VSM).

**Dependency:**
Refer to: p3660

**Note:**
- X521.1 or X522.1: Connection of L1
- X521.2 or X522.2: Connection of L2
- X521.3 or X522.3: Connection of L3

### r3662[0...n]

**Description:**
Displays the input voltage between phases L2 and L3 for the Voltage Sensing Module (VSM).

**Dependency:**
Refer to: p3660

**Note:**
- X521.1 or X522.1: Connection of L1
- X521.2 or X522.2: Connection of L2
- X521.3 or X522.3: Connection of L3

### r3664[0...n]

**Description:**
Displays the status of the temperature evaluation of the Voltage Sensing Module (VSM). This displays whether the temperature actual value has exceeded the fault/alarm threshold.

**Bit field:**
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Alarm is present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fault is present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p3665, r3666, p3667, p3668

### p3665[0...n]

**Description:**
Setting of the temperature sensor for the Voltage Sensing Module (VSM). The temperature sensor is connected to terminals X520.5 and X520.6 of the VSM.

**Value:**
- 0: No sensor
- 1: PTC
- 2: KTY84
### List of parameters

**r3666[0...n]**  
**CO: VSM temperature KTY / VSM temp KTY**  
**VECTOR_G**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** p0150  
- **Func. diagram:** 9886  
- **P-Group:** Closed-loop control  
- **Units group:** 21_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2006  
- **Expert list:** 1  
- **Min:** - [°C]  
- **Max:** - [°C]  

**Description:** Displays the temperature actual value of a KTY84 temperature sensor connected to the Voltage Sensing Module (VSM).

**Dependency:**  
- A KTY84 sensor is connected and p3665 is set to 2.

**Note:**  
- For sensor type PTC (p3665 = 1), the following applies:  
  - below the nominal response temperature, r3666 = -50°C.  
  - above the nominal response temperature, r3666 = 199.9 °C.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [°C]</td>
<td>- [°C]</td>
<td>- [°C]</td>
</tr>
</tbody>
</table>

**p3667[0...n]**  
**VSM line filter overtemperature alarm threshold / VSMfilt_T A_thresh**  
**VECTOR_G**  
- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** p0150  
- **Func. diagram:** 9886  
- **P-Group:** -  
- **Units group:** 21_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2006  
- **Expert list:** 1  
- **Min:** 0.00 [°C]  
- **Max:** 301.00 [°C]  
- **Factory setting:** 150.00 [°C]

**Description:** Sets the alarm threshold for the KTY temperature sensor of the Voltage Sensing Module (VSM) to monitor the line filter temperature.

**Dependency:**  
- A KTY84 sensor is connected and p3665 is set to 2.

**Note:**  
- Refer to: p3665

**Refer to:** A34211

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [°C]</td>
<td>301.00 [°C]</td>
<td>150.00 [°C]</td>
</tr>
</tbody>
</table>

**p3668[0...n]**  
**VSM line filter overtemperature shutdown threshold / VSM filt_T F_thres**  
**VECTOR_G**  
- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** p0150  
- **Func. diagram:** 9886  
- **P-Group:** -  
- **Units group:** 21_1  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2006  
- **Expert list:** 1  
- **Min:** 0.00 [°C]  
- **Max:** 301.00 [°C]  
- **Factory setting:** 180.00 [°C]

**Description:** Sets the shutdown threshold for the KTY temperature sensor of the VSM to monitor the line filter temperature.

**Dependency:**  
- Refer to: p3667

**Refer to:** A34211

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [°C]</td>
<td>301.00 [°C]</td>
<td>180.00 [°C]</td>
</tr>
</tbody>
</table>

**p3669[0...n]**  
**VSM line filter overtemperature hysteresis / VSM filt_T hyst**  
**VECTOR_G**  
- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** p0150  
- **Func. diagram:** 9886  
- **P-Group:** -  
- **Units group:** 21_2  
- **Unit selection:** p0505  
- **Not for motor type:** -  
- **Scaling:** p2006  
- **Expert list:** 1  
- **Min:** 1.00 [K]  
- **Max:** 50.00 [K]  
- **Factory setting:** 3.00 [K]

**Description:** Sets the hysteresis for the alarm threshold of the VSM to monitor the line filter temperature.

**Dependency:**  
- Refer to: p3667

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00 [K]</td>
<td>50.00 [K]</td>
<td>3.00 [K]</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
<td>Dependency</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>p3670[0...n]</td>
<td><strong>VSM 10 V input CT gain / VSM CT_gain</strong>&lt;br&gt;Can be changed: T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Closed-loop control&lt;br&gt;Not for motor type: -&lt;br&gt;Min: 0.000 [A]&lt;br&gt;Max: 1000.000 [A]&lt;br&gt;Factory setting: 1.000 [A]&lt;br&gt;Description: Sets CT gain of the CT connected at the 10 V input of the Voltage Sensing Module (VSM). The parameter specifies the current magnitude in [A] referred to the input voltage at the VSM in [V]. Example: CT with 1 V per 200 A. --&gt; p3670 = 200&lt;br&gt;Dependency: Refer to: r3671, r3672&lt;br&gt;Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM. The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.</td>
<td>Refer to: p3670</td>
</tr>
<tr>
<td>r3671[0...n]</td>
<td><strong>CO: VSM 10 V input CT 1 actual value / VSM CT 1 I_act</strong>&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Closed-loop control&lt;br&gt;Not for motor type: -&lt;br&gt;Min: - [A]&lt;br&gt;Max: - [A]&lt;br&gt;Factory setting: - [A]&lt;br&gt;Description: Displays the current actual value from current transducer (CT) 1 at the 10 V input of the Voltage Sensing Module (VSM).&lt;br&gt;Dependency: Refer to: p3670&lt;br&gt;Note: The CT for phase 1 is connected at terminals X520.1 and X520.2 of the VSM.</td>
<td></td>
</tr>
<tr>
<td>r3672[0...n]</td>
<td><strong>CO: VSM 10 V input CT 2 actual value / VSM CT 2 I_act</strong>&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Closed-loop control&lt;br&gt;Not for motor type: -&lt;br&gt;Min: - [A]&lt;br&gt;Max: - [A]&lt;br&gt;Factory setting: - [A]&lt;br&gt;Description: Displays the current actual value from current transducer (CT) 2 at the 10 V input of the Voltage Sensing Module (VSM).&lt;br&gt;Dependency: Refer to: p3670&lt;br&gt;Note: The CT for phase 2 is connected at terminals X520.3 and X520.4 of the VSM.</td>
<td></td>
</tr>
<tr>
<td>r3673[0...n]</td>
<td><strong>CO: VSM 10 V input 1 actual value / VSM inp 1 U_act</strong>&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: Closed-loop control&lt;br&gt;Not for motor type: -&lt;br&gt;Min: - [V]&lt;br&gt;Max: - [V]&lt;br&gt;Factory setting: - [V]&lt;br&gt;Description: Displays the actual value of the voltage measured at the 10 V input 1 of the Voltage Sensing Modules (VSM).&lt;br&gt;Dependency: Refer to: p3670&lt;br&gt;Note: 10 V input 1: Terminals X520.1 and X520.2</td>
<td></td>
</tr>
</tbody>
</table>
### r3674[0...n]

**CO: VSM 10 V input 2 actual value / VSM inp 2 U_act**

| VECTOR_G |
|------------------|------------------|------------------|
| **Can be changed:** | - | Calculated: - |
| **Data type:** | FloatingPoint32 | Dynamic index: p0150 |
| **P-Group:** | Closed-loop control | Units group: - |
| **Not for motor type:** | - | Scaling: p2001 |
| **Min** | - [V] | Max | - [V] |

**Description:** Displays the actual value of the voltage measured at the 10 V input 2 of the Voltage Sensing Modules (VSM).

**Dependency:** Displayed in the manual.

**Note:** 10 V input 2: Terminals X520.3 and X520.4

### p3680

**BI: Braking Module internal inhibit / BM int inhib**

| B_INF |
|------------------|------------------|------------------|
| **Can be changed:** | T | Calculated: - |
| **Data type:** | Unsigned32 / Binary | Dynamic index: - |
| **P-Group:** | - | Units group: - |
| **Not for motor type:** | - | Scaling: - |
| **Min** | - | Max | - |

**Description:** Sets the signal source to inhibit the internal Braking Module.

- **BI:** p3680 = 1 signal:
  - The Braking Module is inhibited.
- **BI:** p3680 = 0 signal:
  - The Braking Module is enabled.

**Dependency:** Refer to: A06904

**Caution:** When the Braking Module is inhibited, no energy can be dissipated in the braking resistor.

### p3681

**BI: Activating Braking Module internal DC link fast discharge / BM intDCdischg act**

| B_INF |
|------------------|------------------|------------------|
| **Can be changed:** | T | Calculated: - |
| **Data type:** | Unsigned32 / Binary | Dynamic index: - |
| **P-Group:** | - | Units group: - |
| **Not for motor type:** | - | Scaling: - |
| **Min** | - | Max | - |

**Description:** Sets the signal source to activate the DC link fast discharge for an internal braking module.

- When the following conditions apply, the DC link fast discharge is started later with delay time (p3682):
  - **BI:** p3681 = 1 signal.
  - an external line contactor is opened via r0863.1 "energize contactor".
- The DC link fast discharge is interrupted when the following conditions apply:
  - **BI:** p3681 = 0 signal.
  - ON command for the infeed.

**Recommend.:** The DC link fast discharge should be activated if there is an external line contactor and is correctly interconnected (r0863.1, p0860). If the DC link fast discharge is not activated together with an external line contactor, then faults could occur when pre-charging (e.g. F300027).

**Dependency:** Refer to: p3682

**Notice:** The parameter is only effective for Basic Line Modules with the internal Braking Module (this is valid for Basic Line Modules with a power rating of less than 100 kW).
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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<tbody>
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<td>Braking Module internal DC link fast discharge delay time / BM int DC dischg t</td>
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<td>1000 [ms]</td>
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<td>4294967295 [ms]</td>
<td>1000 [ms]</td>
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<td>p3683</td>
<td>Braking Module internal activation threshold brake chopper / BM int act thresh</td>
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<td>780.00 [V]</td>
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<td>Calculated: -</td>
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<td>Units group: -</td>
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<td>Scaling: -</td>
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<td>r3686</td>
<td>BO: Digital Braking Module Fault / Dig BM Fault</td>
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<td>Calculated: -</td>
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<tr>
<td>r3687</td>
<td>BO: Digital Braking Module pre-alarm overtemperature / Dig BM A overtemp</td>
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<td>P-Group:</td>
<td>Units group: -</td>
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<td></td>
<td>Not for motor type:</td>
<td>Scaling: -</td>
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<td>Factory setting</td>
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</tbody>
</table>
1 signal:
The connected temperature sensor (X21.1, X21.2) signals an overtemperature.
Recommend:
Measure the braking resistor temperature using the temperature sensor.

**r3688**
**BO: Braking Module internal overtemperature shutdown / BM int temp shutd**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>-</td>
<td>Refer to: F06908</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
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<td><strong>P-Group:</strong></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
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<td>-</td>
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<tr>
<td><strong>Min</strong></td>
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<td>-</td>
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<tr>
<td><strong>Max</strong></td>
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</tr>
</tbody>
</table>

**Description:**
Displays the shutdown due to the excessively high temperature.

**Dependency:**
Refer to: F06908

**r3689**
**BO: Digital Braking Module Uce fault / Dig BM Uce fault**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
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<td>-</td>
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<tr>
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<td><strong>Not for motor type:</strong></td>
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<td><strong>Min</strong></td>
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<td>-</td>
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<tr>
<td><strong>Max</strong></td>
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</tbody>
</table>

**Description:**
Displays an Uce fault in the internal Braking Module.

**Dependency:**
An Uce fault is present in the internal Braking Module.

**p3784[0...n]**
**BI: Sync-line-drive external increase voltage / Sync ext U incr**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
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<td>Only SINAMICS GM150.</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Functions</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
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</tr>
</tbody>
</table>

**Description:**
Sets the signal source to increase the voltage for external line-drive synchronization.
BI: p3784 = 1 signal:
The voltage is increased.

**p3785[0...n]**
**BI: Sync-line-drive external decrease voltage / Sync ext U decr**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
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</tr>
<tr>
<td><strong>Data type:</strong></td>
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<tr>
<td><strong>P-Group:</strong></td>
<td>Functions</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
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<tr>
<td><strong>Min</strong></td>
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<tr>
<td><strong>Max</strong></td>
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</tr>
</tbody>
</table>

**Description:**
Sets the signal source to decrease the voltage for external line-drive synchronization.
BI: p3785 = 1 signal:
The voltage is lowered.
### List of parameters

#### p3800[0...n]  
**Sync-line-drive activation / Sync act**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Sets the activation for the line-drive synchronization.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value:</td>
<td>0: Sync-line-drive de-activated</td>
</tr>
<tr>
<td></td>
<td>1: Sync-line-drive activated VSM-INT</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p3801, p3802</td>
</tr>
<tr>
<td>Note:</td>
<td>When the ground fault monitoring initiates a fault for overlapping synchronizing the threshold value p0287[1] for the Motor Module and the associated infeed must be appropriately increased (e.g. p0287[1] = 100 %). For p3800 = 1, the following applies: The INTERNAL voltage actual values are used for synchronization. The effects that a (sine-wave) filter - that is connected between the Motor Module and motor - has on the voltage actual values are taken into account (theoretically) by appropriately selecting p0230. VSM: Voltage Sensing Module</td>
</tr>
</tbody>
</table>

| Data type:  | Integer16                                             |
| Dynamic index: | DDS, p0180                                           |
| Units group: | -                                                     |
| Scaling:     | -                                                     |
| Expert list: | 1                                                     |
| Min          | 0                                                     |
| Max          | 1                                                     |
| Factory setting | 0                                                    |

#### p3801[0...n]  
**Sync-line-drive, drive object number / Sync DO_No**

| Description: | Sets the drive object number of the Voltage Sensing Module (VSM) used for the line-drive synchronization. |
| Dependency: | Refer to: p3800, p3802                               |
| Notice:     | The current controller sampling time p0115[0] of the drive object with the VSM used for synchronization must be identical to the current controller sampling time of the drive of the drive used to perform line synchronization. |
| Note:       | VSM: Voltage Sensing Module                          |
|             | The setting p3801 = 1 is always possible (no VSM selected). |
|             | If the VSM is assigned subsequently to a Motor Module, its drive object number must be entered in p3801. |
|             | The line voltage is always measured using the first VSM (see p0151 index 0). |

| Data type:  | Unsigned16                                             |
| Dynamic index: | DDS, p0180                                           |
| Units group: | -                                                     |
| Scaling:     | -                                                     |
| Expert list: | 1                                                     |
| Min          | 1                                                     |
| Max          | 62                                                    |
| Factory setting | 1                                                    |

#### p3802[0...n]  
**BI: Sync-line-drive enable / Sync enable**

| Description: | Sets the signal source to switch in/switch out for the line-drive synchronization. |
| BI: p3802 = 1 signal: | The line-drive synchronization is switched in. |
| Dependency: | Refer to: p3800, p3801 |

| Data type:  | Unsigned32 / Binary                                   |
| Dynamic index: | CDS, p0170                                           |
| Units group: | -                                                     |
| Scaling:     | -                                                     |
| Expert list: | 1                                                     |
| Min          | -                                                     |
| Max          | -                                                     |
| Factory setting | 0                                                    |
**r3803.0** CO/BO: Sync-line-drive control word / Sync STW

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Functions
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:**
Displays the control word for the line-drive synchronization.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Sync-line-drive selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
Re bit 00:
For a 1 signal, p3800 > 0 is set.

---

**r3804** CO: Sync-line-drive target frequency / Sync f_target

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 3030, 7020
- **P-Group:** Functions
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** p2000
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:**
Displays the target frequency for the line-drive synchronization.

**Dependency:**
Refer to: A07941

---

**r3805** CO: Sync-line-drive frequency difference / Sync f_diff

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 7020
- **P-Group:** Functions
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** p2000
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:**
Displays the frequency difference between the measured target frequency and output frequency of the gating unit of the closed-loop control for line-drive synchronization.

---

**p3806[0...n]** Sync-line-drive frequency difference threshold value / Sync f_diff thresh

**VECTOR_G**

- **Can be changed:** U, T
- **Calculated:** CALC_MOD_LIM_REF
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **Func. diagram:** 7020
- **P-Group:** Functions
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:**
Sets the threshold value of the frequency difference to activate the closed-loop phase control for line-drive synchronization.

The closed-loop phase control is activated (r3819.6 = 1), if the frequency difference is less that the threshold value.
### r3808 CO: Sync-line-drive phase difference / Sync phase diff

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3808</td>
<td>Displays the phase difference between the measured target phase and phase of the gating unit of the closed-loop control for line-drive synchronization.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td></td>
<td>- ['°']</td>
<td>- ['°']</td>
</tr>
</tbody>
</table>

### p3809[0...n] Sync-line-drive phase setpoint / Sync phase setp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3809</td>
<td>Sets the phase setpoint for the line-drive synchronization.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td></td>
<td>-180.00 ['°']</td>
<td>179.90 ['°']</td>
</tr>
</tbody>
</table>

### p3811[0...n] Sync-line-drive frequency limiting / Sync f_lim

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3811</td>
<td>Sets the frequency limiting of the phase controller output for the line-drive synchronization.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td></td>
<td>0.00 [Hz]</td>
<td>1.00 [Hz]</td>
</tr>
</tbody>
</table>

### r3812 CO: Sync-line-drive correction frequency / Sync f_corr

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3812</td>
<td>Displays the correction frequency for the line-drive synchronization.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td></td>
<td>- [Hz]</td>
<td>- [Hz]</td>
</tr>
</tbody>
</table>

### p3813[0...n] Sync-line-drive phase synchronism threshold value / Sync Ph_sync thrsh

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3813</td>
<td>Sets the threshold value of the phase synchronism for the line-drive synchronization.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>Functions</td>
<td></td>
<td>1.00 ['°']</td>
<td>20.00 ['°']</td>
</tr>
</tbody>
</table>
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r3814</strong></td>
<td>Displays the voltage difference between the measured target voltage and output voltage of the gating unit of the closed-loop control for line-drive synchronization.</td>
</tr>
<tr>
<td><strong>p3815[0...n]</strong></td>
<td>Sets the threshold value of the voltage difference for the line-drive synchronization. A prerequisite for synchronism is reached if the voltage difference is less than the threshold value.</td>
</tr>
<tr>
<td><strong>r3819.0...7</strong></td>
<td>Displays the status word for the line-drive synchronization.</td>
</tr>
<tr>
<td><strong>p3820[0...n]</strong></td>
<td>The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 1st value pair of the friction characteristic.</td>
</tr>
</tbody>
</table>

**r3814**
- **CO**: Sync-line-drive voltage difference / Sync U_diff
- **VECTOR_G**
- **Can be changed**: -
- **Calculated**: -
- **Access level**: 2
- **Data type**: FloatingPoint32
- **Dynamic index**: -
- **Func. diagram**: 7020
- **P-Group**: Functions
- **Units group**: -
- **Unit selection**: -
- **Not for motor type**: -
- **Scaling**: p2001
- **Expert list**: 1
- **Min**: - [Vrms]
- **Max**: - [Vrms]
- **Factory setting**: |
- **Description**: Displays the voltage difference between the measured target voltage and output voltage of the gating unit of the closed-loop control for line-drive synchronization.

**p3815[0...n]**
- **Sync-line-drive voltage difference threshold value / Sync U_diff thresh**
- **VECTOR_G**
- **Can be changed**: U, T
- **Calculated**: CALC_MOD_LIM_REF
- **Access level**: 2
- **Data type**: FloatingPoint32
- **Dynamic index**: DDS, p0180
- **Func. diagram**: 7020
- **P-Group**: Functions
- **Units group**: -
- **Unit selection**: -
- **Not for motor type**: -
- **Scaling**: -
- **Expert list**: 1
- **Min**: 0.00 [%]
- **Max**: 20.00 [%]
- **Factory setting**: 10.00 [%]
- **Description**: Sets the threshold value of the voltage difference for the line-drive synchronization. A prerequisite for synchronism is reached if the voltage difference is less than the threshold value. **Note**: Synchronism is reached (r3819.2 = 1), if the AND logic operation of the results from the phase measurement (p3813) and voltage measurement (p3815) is fulfilled. For voltage manipulated quantity margin (reserve) of the drive converter, the amplitude difference (r3814) between the setpoint and actual value is controlled (corrected) to zero.

**r3819.0...7**
- **CO/BO**: Sync-line-drive status word / Sync ZSW
- **VECTOR_G**
- **Can be changed**: -
- **Calculated**: -
- **Access level**: 2
- **Data type**: Unsigned32
- **Dynamic index**: -
- **Func. diagram**: 7020
- **P-Group**: Functions
- **Units group**: -
- **Unit selection**: -
- **Not for motor type**: -
- **Scaling**: -
- **Expert list**: 1
- **Min**: -
- **Max**: -
- **Factory setting**: -
- **Description**: Displays the status word for the line-drive synchronization.

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>Sync-line-drive enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>Sync-line-drive synchronism reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Sync-line-drive synchronizing error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td></td>
<td>Sync-line-drive frequency measurement active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Sync-line-drive phase control active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td></td>
<td>Sync-line-drive without drive</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**p3820[0...n]**
- **Friction characteristic, value n0 / Friction n0**
- **VECTOR_G (n/M)**
- **Can be changed**: T
- **Calculated**: CALC_MOD_LIM_REF
- **Access level**: 2
- **Data type**: FloatingPoint32
- **Dynamic index**: DDS, p0180
- **Func. diagram**: 7010
- **P-Group**: Functions
- **Units group**: 3_1
- **Unit selection**: p0505
- **Not for motor type**: REL
- **Scaling**: -
- **Expert list**: 1
- **Min**: 0.00 [rpm]
- **Max**: 210000.00 [rpm]
- **Factory setting**: 15.00 [rpm]
- **Description**: The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 1st value pair of the friction characteristic.
- **Dependency**: Refer to: p3830, p3845

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### p3821[0...n] Friction characteristic, value n1 / Friction n1

- **VECTOR_G (n/M)**
  - **Can be changed:** T
  - **Calculated:** CALC_MOD_LIM_REF
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Functions
- **Units group:** 3_1
- **Not for motor type:** REL
- **Scaling:**
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
- **Expert list:** 1
- **Access level:** 2
- **Factory setting:** 30.00 [rpm]

**Description:**
The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 2nd value pair of the friction characteristic.

**Dependency:**
Refer to: p3831, p3845

### p3822[0...n] Friction characteristic, value n2 / Friction n2

- **VECTOR_G (n/M)**
  - **Can be changed:** T
  - **Calculated:** CALC_MOD_LIM_REF
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Functions
- **Units group:** 3_1
- **Not for motor type:** REL
- **Scaling:**
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
- **Expert list:** 1
- **Access level:** 2
- **Factory setting:** 60.00 [rpm]

**Description:**
The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 3rd value pair of the friction characteristic.

**Dependency:**
Refer to: p3832, p3845

### p3823[0...n] Friction characteristic, value n3 / Friction n3

- **VECTOR_G (n/M)**
  - **Can be changed:** T
  - **Calculated:** CALC_MOD_LIM_REF
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Functions
- **Units group:** 3_1
- **Not for motor type:** REL
- **Scaling:**
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
- **Expert list:** 1
- **Access level:** 2
- **Factory setting:** 120.00 [rpm]

**Description:**
The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 4th value pair of the friction characteristic.

**Dependency:**
Refer to: p3833, p3845

### p3824[0...n] Friction characteristic, value n4 / Friction n4

- **VECTOR_G (n/M)**
  - **Can be changed:** T
  - **Calculated:** CALC_MOD_LIM_REF
- **Data type:** FloatingPoint32
- **Dynamic index:** DDS, p0180
- **P-Group:** Functions
- **Units group:** 3_1
- **Not for motor type:** REL
- **Scaling:**
  - **Min:** 0.00 [rpm]
  - **Max:** 210000.00 [rpm]
- **Expert list:** 1
- **Access level:** 2
- **Factory setting:** 150.00 [rpm]

**Description:**
The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 5th value pair of the friction characteristic.

**Dependency:**
Refer to: p3834, p3845
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3825[0...n]</td>
<td>Friction characteristic, value n5 / Friction n5</td>
<td>The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 6th value pair of the friction characteristic. Refer to: p3835, p3845</td>
</tr>
<tr>
<td>p3826[0...n]</td>
<td>Friction characteristic, value n6 / Friction n6</td>
<td>The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 7th value pair of the friction characteristic. Refer to: p3836, p3845</td>
</tr>
<tr>
<td>p3827[0...n]</td>
<td>Friction characteristic, value n7 / Friction n7</td>
<td>The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 8th value pair of the friction characteristic. Refer to: p3837, p3845</td>
</tr>
<tr>
<td>p3828[0...n]</td>
<td>Friction characteristic, value n8 / Friction n8</td>
<td>The friction characteristic is defined by 10 value pairs. This parameter specifies the n coordinate of the 9th value pair of the friction characteristic. Refer to: p3838, p3845</td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>p3829[0...n]</th>
<th>Friction characteristic, value n9 / Friction n9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed: T</strong> <strong>Calculated:</strong> <strong>Access level:</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Functions</td>
<td><strong>Units group:</strong> 3_1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
<td><strong>Scaling:</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>210000.00 [rpm]</td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.
This parameter specifies the n coordinate of the 10th value pair of the friction characteristic.

**Dependency:**
Refer to: p3839, p3845

<table>
<thead>
<tr>
<th>p3830[0...n]</th>
<th>Friction characteristic, value M0 / Friction M0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed: T</strong> <strong>Calculated:</strong> <strong>Access level:</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Functions</td>
<td><strong>Units group:</strong> 7_1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
<td><strong>Scaling:</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 1st value pair of the friction characteristic.

**Dependency:**
Refer to: p3820, p3845

<table>
<thead>
<tr>
<th>p3831[0...n]</th>
<th>Friction characteristic, value M1 / Friction M1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed: T</strong> <strong>Calculated:</strong> <strong>Access level:</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Functions</td>
<td><strong>Units group:</strong> 7_1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
<td><strong>Scaling:</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 2nd value pair of the friction characteristic.

**Dependency:**
Refer to: p3821, p3845

<table>
<thead>
<tr>
<th>p3832[0...n]</th>
<th>Friction characteristic, value M2 / Friction M2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (n/M)</strong></td>
<td><strong>Can be changed: T</strong> <strong>Calculated:</strong> <strong>Access level:</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> DDS, p0180</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Functions</td>
<td><strong>Units group:</strong> 7_1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> REL</td>
<td><strong>Scaling:</strong></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.
This parameter specifies the M coordinate of the 3rd value pair of the friction characteristic.

**Dependency:**
Refer to: p3822, p3845
### Parameters

#### List of parameters

**p3833[0...n]**  
**Friction characteristic, value M3 / Friction M3**  
VECTOR_G (n/M)  
Can be changed: T  
Calculated: -  
Access level: 2  
Data type: FloatingPoint32  
Dynamic index: DDS, p0180  
Func. diagram: 7010  
P-Group: Functions  
Units group: 7_1  
Unit selection: p0505  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min: 0.00 [Nm]  
Max: 1000000.00 [Nm]  
Factory setting:  

**Description:**  
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 4th value pair of the friction characteristic.  
**Dependency:**  
Refer to: p3823, p3845

**p3834[0...n]**  
**Friction characteristic, value M4 / Friction M4**  
VECTOR_G (n/M)  
Can be changed: T  
Calculated: -  
Access level: 2  
Data type: FloatingPoint32  
Dynamic index: DDS, p0180  
Func. diagram: 7010  
P-Group: Functions  
Units group: 7_1  
Unit selection: p0505  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min: 0.00 [Nm]  
Max: 1000000.00 [Nm]  
Factory setting: -1000000.00 [Nm]  

**Description:**  
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 5th value pair of the friction characteristic.  
**Dependency:**  
Refer to: p3824, p3845

**p3835[0...n]**  
**Friction characteristic, value M5 / Friction M5**  
VECTOR_G (n/M)  
Can be changed: T  
Calculated: -  
Access level: 2  
Data type: FloatingPoint32  
Dynamic index: DDS, p0180  
Func. diagram: 7010  
P-Group: Functions  
Units group: 7_1  
Unit selection: p0505  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min: 0.00 [Nm]  
Max: 1000000.00 [Nm]  
Factory setting: -1000000.00 [Nm]  

**Description:**  
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 6th value pair of the friction characteristic.  
**Dependency:**  
Refer to: p3825, p3845

**p3836[0...n]**  
**Friction characteristic, value M6 / Friction M6**  
VECTOR_G (n/M)  
Can be changed: T  
Calculated: -  
Access level: 2  
Data type: FloatingPoint32  
Dynamic index: DDS, p0180  
Func. diagram: 7010  
P-Group: Functions  
Units group: 7_1  
Unit selection: p0505  
Not for motor type: REL  
Scaling: -  
Expert list: 1  
Min: 0.00 [Nm]  
Max: 1000000.00 [Nm]  
Factory setting: -1000000.00 [Nm]  

**Description:**  
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 7th value pair of the friction characteristic.  
**Dependency:**  
Refer to: p3826, p3845
Parameters

List of parameters

---

**p3837[0...n]**  
Friction characteristic, value M7 / Friction M7

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 7010</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
<td>0.00 [Nm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 8th value pair of the friction characteristic.

**Dependency:** Refer to: p3827, p3845

---

**p3838[0...n]**  
Friction characteristic, value M8 / Friction M8

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 7010</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
<td>0.00 [Nm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 9th value pair of the friction characteristic.

**Dependency:** Refer to: p3828, p3845

---

**p3839[0...n]**  
Friction characteristic, value M9 / Friction M9

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: DDS, p0180</td>
<td>Func. diagram: 7010</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: 7_1</td>
<td>Unit selection: p0505</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1000000.00 [Nm]</td>
<td>1000000.00 [Nm]</td>
<td>0.00 [Nm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
The friction characteristic is defined by 10 value pairs.  
This parameter specifies the M coordinate of the 10th value pair of the friction characteristic.

**Dependency:** Refer to: p3829, p3845

---

**r3840.0...9**  
CO/BO: Friction characteristic, status word / Friction ZSW

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 7010</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the state of the friction characteristic.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Friction characteristic OK</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Friction characteristic record activated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Friction characteristic record completed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Friction characteristic record aborted</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Friction characteristic positive direction</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Status model-controlled frictional torque</td>
<td>Upper</td>
<td>Lower</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**  
Re bit 9:  
For closed-control of an induction motors with encoder, the switchover between the current and observer model is displayed (see also r1751 bit 19), if p3844 is > 0.
For bit 9 = 0 (observer model active) the frictional torque is calculated from the characteristic values from the characteristic point entered into p3844.
For bit 9 = 1 (current model active) the frictional torque is calculated from the characteristic values below the characteristic point entered into p3844.

**r3841**

**Description:** Displays the torque of the friction characteristic dependent on the speed.

**Dependency:** Refer to: p1569, p3842

**p3842**

**Description:** Setting to activate and de-activate the friction characteristic.

**Value:**
- 0: Friction characteristic de-activated
- 1: Friction characteristic activated

**Dependency:** Refer to: p1569, r3841, p3845

**p3843[0...n]**

**Description:** Sets the smoothing time constant (PT1) for the frictional torque difference, which is entered when changing over the status bit r3840 bit 9.

**Dependency:** Refer to: p3844

**p3844[0...n]**

**Description:** Selects the upper changeover point of the friction characteristic for the frictional torque input controlled by the motor model of the induction motor.

The speed of this changeover point is preassigned when automatically calculating with the changeover speed p1752. The changeover point located below is preassigned with the changeover speed p1752 * (1 - p1753).
Example: p3844 = 3 means that the speed value for the change to the monitor model (p3823 = p1752) is entered into p3823 (friction characteristic value n3).
Depending on the display of r3840 bit 9, the frictional torque is calculated from the friction characteristic values, which are associated with these changeover points. For the changeover of the motor model, with hysteresis, the frictional torque smoothed with p3843 changes between these two states.
Dependency: As part of the automatic calculation (p0340), p3844 is only activated for closed loop control (p1300 = 21, 23) of induction motors with encoder.

Refer to: p3843

Notice: If the changeover point defined using p3844 does not match the changeover speed p1752, then internally, the model-controlled friction torque input is automatically deactivated (same as for p3844 = 0).

Note: For p3844 = 0, the model-controlled frictional torque changeover is deactivated. The frictional torque is then calculated the same as for the encoderless control by interpolating between the points along the friction characteristic.

### p3845 Friction characteristic record activation / Frict rec act

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Setting for the friction characteristic record.

After the next power-on command, the friction characteristic is automatically recorded.

Value:

- **0**: Friction characteristic record de-activated
- **1**: Friction char record activated for all directions
- **2**: Friction char record activated for positive direction
- **3**: Friction char record activated for negative direction

Dependency:

- When selecting the friction characteristic measurement, the drive data set changeover is suppressed.
- For linear drives (refer to r0108 bit 12) it is not permissible to carry out the friction characteristic measurement for mechanical systems that limit travel.

Danger:

- For drives with a mechanical system that limit the distance moved, it must be ensured that during recording, the friction characteristic is not reached. If this is not the case, then it is not permissible that the measurement is carried out.

Notice:

- To permanently accept the determined settings they must be saved in a non-volatile fashion (p0971, p0977).

Note:

- When the friction characteristic record is active, it is not possible to save the parameters (p0971, p0977).
- When the friction characteristic record is active (p3845 > 0), it is not possible to change p3820 ... p3829, p3830 ... p3839 and p3842.
- When recording the friction characteristic, in addition to the friction, the motor losses are also determined (e.g. iron losses, eddy current losses and re-magnetizing losses). A differentiation is not made between these individual loss components. We recommend that a motor temperature sensor is used because torque deviations can also be emulated/mapped on the characteristic due to the thermal influence.

### p3846[0...n] Friction characteristic record ramp-up/ramp-down time / Frict rec t_RFG

<table>
<thead>
<tr>
<th>VECTOR_G (n/M)</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Units group:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.000 [s]</td>
<td>999999.000 [s]</td>
<td>10.000 [s]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description:

- Sets the ramp-up/ramp-down time of the ramp-up/ramp-down function generator to automatically record the friction characteristic. The drive is accelerated from standstill (setpoint = 0) up to the maximum speed/velocity (p1082) in this time.

Dependency:

- Refer to: p3845
**p3847[0...n]** | Friction characteristic record warm-up time / Frict rec t_warm
---|---
VECTOR\_G (n/M) | 
Can be changed: | T  
Calculated: | -  
Access level: | 2  
Data type: | FloatingPoint32  
Dynamic index: | DDS, p0180  
Func. diagram: | 7010  
P-Group: | Functions  
Units group: | -  
Unit selection: | -  
Not for motor type: | REL  
Scaling: | -  
Expert list: | 1  
Min | 0.000 [s]  
Max | 3600.000 [s]  
Factory setting | 0.000 [s]  
Description: | Sets the warm-up time.  
For an automatic trace (record) to start, the highest selected speed (p3829) is approached and this time is held. After this, the measurement is started with the highest speed.  
Dependency: | Refer to: p3829, p3845

**p3860** | Number of Braking Modules connected in parallel / BM qty par\_cct
---|---
B\_INF (Brk Mod ext) | 
Can be changed: | C2(2)  
Calculated: | -  
Access level: | 3  
Data type: | Unsigned8  
Dynamic index: | -  
Func. diagram: | 9951  
P-Group: | Converter  
Units group: | -  
Unit selection: | -  
Not for motor type: | -  
Scaling: | -  
Expert list: | 1  
Min | 1  
Max | 8  
Factory setting | 1  
Description: | Sets the number of Braking Modules connected in parallel in a DC link.  
Note: | The parameter can only be written to if the infeed is in the commissioning mode (p0010 = 2).

**r3861.0...7** | BO: Braking Module inhibit/acknowledgement / BM inhib/ackn
---|---
B\_INF (Brk Mod ext) | 
Can be changed: | -  
Calculated: | -  
Access level: | 3  
Data type: | Unsigned32  
Dynamic index: | -  
Func. diagram: | 9951  
P-Group: | Commands  
Units group: | -  
Unit selection: | -  
Not for motor type: | -  
Scaling: | -  
Expert list: | 1  
Min | -  
Max | -  
Factory setting | -  
Description: | Signal to energize terminal X21.1 "inhibit/acknowledgement" on the Braking Module.  
This binector output is used as signal source to interconnect to a digital output. For "booksize" formats the digital output must be connected to terminal X21.1 and for "chassis" formats the digital output must be connected to terminal X21.3 of the particular Braking Module.  
Bit field: | Bit | Signal name | 1 signal | 0 signal | FP
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Inhibit/acknowledge Braking Module 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Inhibit/acknowledge Braking Module 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Inhibit/acknowledge Braking Module 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Inhibit/acknowledge Braking Module 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Inhibit/acknowledge Braking Module 5</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Inhibit/acknowledge Braking Module 6</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Inhibit/acknowledge Braking Module 7</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Inhibit/acknowledge Braking Module 8</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Warning:** | Check that binector outputs BO: r3861.n are connected correctly and that the appropriate digital outputs are wired correctly. If the interconnection/wiring is incorrect, the software could execute a different (incorrect) function via binector outputs BO: r3861.n if the Braking Module develops a fault.
### Description:
Sets the delay time for switching in the DC link fast discharge.

### Dependency:
Refer to: p3862, r3864

### Note:
The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

### Description:
Sets the signal source to activate the DC link fast discharge.

#### The DC link fast discharge is started later with delay time (p3862) when the following conditions apply:
- BI: p3863 = 1 signal.
- an external line contactor is opened via r0863.1 "energize contactor".

#### The DC link fast discharge is interrupted when the following conditions apply:
- BI: p3863 = 0 signal.
- ON command for the infeed.

#### Recommend.:  
The DC link fast discharge should be activated if there is an external line contactor and is correctly interconnected (r0863.1, p0860). If the DC link fast discharge is not activated together with an external line contactor, then faults could occur when pre-charging (e.g. F30027).

### Dependency:
Refer to: r3864  
Refer to: F30027

### Note:
The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

### Description:
Signal to control (energize) terminal X21.2 "DC link fast discharge" on the Braking Module.

#### This binector output is used as signal source to interconnect to a digital output. The digital output must be connected to terminal X21.2 of the particular Braking Module.

### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fast discharge Braking Module 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fast discharge Braking Module 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fast discharge Braking Module 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fast discharge Braking Module 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Fast discharge Braking Module 5</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Fast discharge Braking Module 6</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Fast discharge Braking Module 7</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Fast discharge Braking Module 8</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
**Dependency:**
Refer to: p3863
Refer to: F30027

**Warning:**
It must be carefully ensured that the binector outputs BO: p3864.n are correctly interconnected and also that the appropriate digital outputs are correctly connected up.

If the interconnection/connection is incorrect, in the case of an active DC link fast discharge, the software could execute another function (incorrect function) via binector outputs BO: p3864.n or could also permanently control the DC link fast discharge even if the line contactor is closed.

**Note:**
The DC link fast discharge is only possible for "booksize" formats. This function is not supported for "chassis" formats.

### p3865[0...7]
**BI: Braking Module pre-warning I*t shutdown / BM I*t shutdown**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source for the message &quot;pre-alarm I*t shutdown&quot; of the Braking Module.</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>BI: p3865[0...7] = 1 signal → no pre-alarm, I*t shutdown</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI: p3865[0...7] = 0 signal → pre-alarm I*t shutdown (A06901)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: A06901

**Note:**
For the Braking Module, this message is output via the following terminal:
- X21.4 for the "Booksize" format
This function is not supported for the "chassis" format.

### p3866[0...7]
**BI: Braking Module fault / BM fault**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source for the &quot;Fault&quot; message of the Braking Module.</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>BI: p3866[0...7] = 1 signal → no fault</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI: p3866[0...7] = 0 signal → fault (A06900)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: A06900

**Note:**
For the Braking Module, this message is output via the following terminal:
- X21.4 for the "Booksize" format
- X21.5 for the "Chassis" format

### p3900
**Completion of quick commissioning / Compl quick_comm**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exits the quick commissioning (p0010 = 1) with automatic calculation of all of the parameters that depend on the entries made during the quick commissioning.</td>
<td>C2(1)</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>p3900 = 1 initially includes a parameter reset (factory setting, the same as p0970 = 1) for all parameters of the drive object; however, without overwriting the entries made during the quick commissioning, the interconnections of PROFINET P2D telegram selection (p0922) and the interconnections via p0700 are re-established and all of the dependent filter and closed-loop control parameters are calculated (corresponding to p0340 = 1).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
p3900 = 2 includes the restoration of the interconnections of PROFIBUS PZD telegram selection (p0922) and the
interconnections via p0700 and the calculations corresponding to p0340 = 1.
p3900 = 3 only includes the end of quick commissioning.

Value:
- 0: No quick parameterization
- 1: Quick parameterization after parameter reset
- 2: Quick param. (only) for controller par. and reset for BICO par
- 3: Completion of quick commissioning

Notice:
After the value has been modified, no further parameter modifications can be made and the status is shown in
r3996. Modifications can be made again when r3996 = 0.

Note:
When the calculations have been completed, p3900 and p0010 are automatically reset to a value of 0.

**p3900**  
Completion of quick commissioning / Compl quick_comm  
VECTOR_G  
Can be changed: C2(1)  
Calculated: -  
Access level: 1

**Value:**
- 0: No quick parameterization
- 1: Quick parameterization after parameter reset
- 2: Quick parameterization (only) for BICO and motor parameters
- 3: Quick parameterization for motor parameters (only)

**Notice:**
After the value has been modified, no further parameter modifications can be made and the status is shown in
r3996. Modifications can be made again when r3996 = 0.

**Note:**
When the calculations have been completed, p3900 and p0010 are automatically reset to a value of 0.

When calculating motor, open-loop and closed-loop control parameters (such as for p0340 = 1) parameters associ-
ated with a selected Siemens catalog motor are not overwritten. If a catalog motor has not been selected (see p0300),
then the following parameters are reset with p3900 > 0 in order to restore the situation that applied when commissioning
the drive for the first time:
induction motors p0320, p0352, p0353, p0362 ... p0369, p0391 ... p0393, p0604, p0605, p0626 ... p0628
synchronous motor p0326, p0327, p0352, p0353, p0391 ... p0393, p0604, p0605.

**p3901[0...n]**  
Power unit EEPROM Vdc offset calibration / PU EEPROM Vdc_offs  
B_INF, VECTOR_G  
Can be changed: C1, C2(1), T  
Calculated: -  
Access level: 3

**Value:**
- 0: -40.0 [V]  
- 1: 40.0 [V]  
- 2: 0.0 [V]

**Dependency:**
Refer to: r0192, p0212

**Caution:**
Incorrect use of the calibration can have a negative impact on the closed-loop control. The parameter influences the
upper and lower voltage detection.

Differential voltage for calibrating the offset for DC-link voltage measurement.

Refer to: r0192, p0212

Incorrect use of the calibration can have a negative impact on the closed-loop control. The parameter influences the
upper and lower voltage detection.
### Note:
Parameter entries are directly saved in the DRIVE-CLiQ component involved.
The parameter is only effective in the case of booksize power units if r0192 bit 22 and p0212 bit 0 are set.

### r3925[0...n] Identification final display / Ident final_disp

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Motor/control parameters calculated (p0340 = 1, p3900 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Motor data identification carried out at standstill (p1910 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Rotating measurement carried out (p1960 = 1, 2)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Motor encoder adjustment carried out (p1960 = 1, p1990 = 1,3)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Automatic parameterization only for U/f control (r0108.2 = 0)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Motor equivalent circuit diagram parameters changed</td>
<td>Changed</td>
<td>Not changed</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### Note:
The individual bits are only set if the appropriate action has been initiated and successfully completed.
When motor rating plate parameters are changed, the final display is reset.
When setting the individual bits, all of the most significant bits are reset.

### r3927[0...n] Motor data identification control word / MotID STW

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Stator inductance estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Cl.-loop current control w/ dead-beat controller</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Rotor time constant estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Leakage inductance estimate no measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Activates the identification dynamic leakage inductance</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Determine Tr and Lsig evaluation in the time range</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Activate vibration damping</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>De-activate vibration detection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>De-activate pulse measurement Lq Ld</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>De-activate rotor resistance Rr measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>De-activate valve interlocking time measurement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Parameters

List of parameters

15 Determine only stator resistance, valve voltage fault, dead time
Yes No -

Dependency: Refer to: r3925
Note: The parameter is a copy of p1909.

r3928[0...n] Rotating measurement configuration / Rot meas config
VECTOR_G (n/M)
Can be changed: - Calculated: CALC_MOD_ALL Access level: 3
Data type: Unsigned16 Dynamic index: DDS, p0180 Func. diagram: -
P-Group: Motor identification Units group: Unit selection: -
Not for motor type: REL Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Successfully completed component of the last rotating measurement carried out.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Enc test active Yes No -
01 Saturation characteristic identification Yes No -
02 Moment of inertia identification Yes No -
03 Re-calculates the speed controller parameters Yes No -
04 Speed controller optimization (vibration test) Yes No -
05 q leakage inductance ident. (for current controller adaptation) Yes No -
12 Measurement shortened Yes No -

Dependency: Refer to: r3925
Note: The parameter is a copy of p1959.

p3950 Service parameter / Serv. par.
CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: C1, U, T Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: For service personnel only.

r3974 Drive unit status word / Drv_unit ZSW
CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: - Calculated: - Access level: 1
Data type: Unsigned32 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Displays the status word for the drive unit.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Software reset active Yes No -
01 Writing of parameters disabled as parameter save in progress Yes No -
02 Writing of parameters disabled as macro is running Yes No -
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3977</td>
<td>Displays the BICO interconnections that have been parameterized in the complete (overall) topology. The counter is incremented by one for each modified BICO interconnection.</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>r3978</td>
<td>Displays the counter reading for modified BICO interconnections on this device. The counter is incremented by one for each modified BICO interconnection.</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>p3981</td>
<td>Setting to acknowledge all active faults of a drive object. Safety messages cannot be acknowledged using this parameter. Parameter should be set from 0 to 1 to acknowledge. After acknowledgement, the parameter is automatically reset to 0.</td>
<td>U, T</td>
<td>-</td>
<td>2</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>p3985</td>
<td>Sets the mode to change over the master control / LOCAL mode.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
<td>Integer16</td>
<td>-</td>
<td>-</td>
<td></td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
**Parameters**

**List of parameters**

**Value:**
- 0: Change master control for STW1.0 = 0
- 1: Change master control in operation

**Danger:**
When changing the master control in operation, the drive can manifest undesirable behavior - e.g. it can accelerate up to another setpoint.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r3986</td>
<td>Parameter count / Parameter No.</td>
</tr>
<tr>
<td>All objects</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>r3988[0...1]</td>
<td>Boot state / Boot_state</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Displays the number of parameters for this drive unit.
The number comprises the device-specific and the drive-specific parameters.

**Dependency:**
Refer to: r0980, r0981, r0989

**Value:**
- 0: Not active
- 1: Fatal fault
- 10: Fault
- 20: Reset all parameters
- 30: Drive object modified
- 40: Download using commissioning software
- 50: Parameter download using commissioning software
- 90: Reset Control Unit and delete drive objects
- 100: Start initialization
- 101: Wait for topology input
- 110: Instantiate Control Unit basis
- 111: Insert drive object
- 112: Remove drive object
- 113: Change drive object number
- 114: Change component number
- 115: Parameter download using commissioning software
- 117: Remove component
- 150: Wait until actual topology determined
- 160: Evaluate topology
- 170: Instantiate Control Unit reset
- 180: Initialization YDB configuration information
- 200: First commissioning
- 210: Create drive packages
- 250: Wait for topology acknowledge
- 325: Wait until p0009 = 0 is set
- 350: Determine drive type
- 360: Write into topology-dependent parameters
- 370: Write into topology-dependent parameters
Parameters

List of parameters

550: Call conversion functions for parameter
625: Wait non-cyclic starting DRIVE-CLiQ
650: Start cyclic operation
660: Evaluate drive commissioning status
670: Autom. FW update DRIVE-CLiQ components
680: Wait for CU LINK slaves
690: Wait non-cyclic starting DRIVE-CLiQ
700: Save parameters
725: Wait until DRIVE-CLiQ cyclic
740: Check the ability to operate
745: Start of the time slices
750: Interrupt enable
800: Initialization finished
10050: Wait for synchronization
10100: Wait for CU LINK slaves
10150: Wait until actual topology determined
10200: Evaluation component status
10250: Call conversion functions for parameter
10300: Preparation cyclic operation
10350: Autom. FW update DRIVE-CLiQ components
10400: Wait for slave properties
10450: Check CX/NX status
10500: Wait until DRIVE-CLiQ cyclic
10550: Carry out warm start
10600: Evaluate, encoder status
10800: Partial boot completed

Index:
[0] = System
[1] = Partial boot

r3996[0...1] Parameter write inhibit status / Par_write inhib st
All objects
Can be changed: - Calculated: - Access level: 1
Data type: Unsigned8 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting - -

Description: Displays whether writing to parameters is inhibited.
r3996[0] = 0:
Parameter write not inhibited.
0 < r3996[0] < 100:
Parameter write inhibited. The value shows how the calculations are progressing.

Index:
[0] = Progress calculations
[1] = Cause

Note:
Re index 1:
Only for internal Siemens troubleshooting.

r3998 First infeed commissioning / First inf_comm
B_INF
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: - Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting 0 65535 -

Description: Displays whether the infeed must be commissioned for the first time.
0 = Yes
2 = No
### r3998[0...n] First drive commissioning / First drv_comm

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dynamic index:** DDS, p0180  
**Func. diagram:**  

**P-Group:**  
**Units group:**  
**Unit selection:**  

**Not for motor type:**  
**Scaling:**  
**Expert list:** 1

**Min**  
0

**Max**  
65535

**Description:** Displays whether the drive still has to be commissioned for the first time.  
0 = Yes  
2 = No

### r4021 TB30 digital inputs terminal actual value / TB30 DI act value

**TB30**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:**  
**Func. diagram:** 9100

**P-Group:** Commands  
**Units group:**  
**Unit selection:**  

**Not for motor type:**  
**Scaling:**  
**Expert list:** 1

**Min**  
-  

**Max**  
-  

**Description:** Displays the actual value at the digital inputs.  
This means that the actual input signal can be checked at terminal DI x prior to switching from the simulation mode (p4095.x = 1) to the terminal mode (p4095.x = 0).

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X481.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X481.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X481.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X481.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**  
DI: Digital Input

### r4021 TM31 digital inputs terminal actual value / TM31 DI act value

**TM31**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:**  
**Func. diagram:** 1840, 9550, 9552, 9560, 9562

**P-Group:** Commands  
**Units group:**  
**Unit selection:**  

**Not for motor type:**  
**Scaling:**  
**Expert list:** 1

**Min**  
-  

**Max**  
-  

**Description:** Displays the actual value at the digital inputs.  
This means that the actual input signal can be checked at terminal DI x or DI/DO x prior to switching from the simulation mode (p4095.x = 1) to terminal mode (p4095.x = 0).

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X520.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X530.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X530.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X530.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
**Note:**
If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.

**DI:** Digital Input
**DI/DO:** Bidirectional Digital Input/Output

### r4022.0...3
**CO/BO: TB30 digital inputs, status / TB30 DI status**

**TB30**
- Can be changed: -
- Calculated: -
- Access level: 1
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: 1790, 9100
- P-Group: Commands
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**
Displays the status of the digital inputs of the Terminal Board 30 (TB30).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X481.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X481.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X481.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X481.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r4023

**Note:**
DI: Digital Input

### r4022.0...11
**CO/BO: TM31 digital inputs, status / TM31 DI status**

**TM31**
- Can be changed: -
- Calculated: -
- Access level: 1
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: 1840, 9550, 9552, 9560, 9562
- P-Group: Commands
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**
Displays the status of the digital inputs of Terminal Module 31 (TM31).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X520.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X530.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X530.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X530.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r4023

**Note:**
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

### r4023.0...3
**BO: TB30 digital inputs, status inverted / TB30 DI status inv**

**TB30**
- Can be changed: -
- Calculated: -
- Access level: 1
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: 1790, 9100
- P-Group: Commands
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**
Displays the inverted status of the digital inputs of the Terminal Board 30 (TB30).
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X481.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X481.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X481.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X481.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4022

**Note:** DI: Digital Input

---

**r4023.0...11 CO/BO: TM31 digital inputs, status inverted / TM31 DI status inv**

**TM31**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1

**Data type:** Unsigned32

**Dynamic index:** -

**P-Group:** Commands

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:** Displays the inverted status of the digital inputs of Terminal Module 31 (TM31).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X520.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X530.1)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X530.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X530.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4022

**Note:** DI: Digital Input

**DI/DO:** Bidirectional Digital Input/Output

---

**p4028 TM31 set input or output / TM31 DI or DO**

**TM31**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 1

**Data type:** Unsigned32

**Dynamic index:** -

**P-Group:** Commands

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:** Sets the bidirectional digital inputs/outputs as input or output on the Terminal Module 31 (TM31).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** DI/DO: Bidirectional Digital Input/Output
### p4030
**BI: TB30 signal source for terminal DO 0 / TB30 S_src DO 0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB30</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
</tbody>
</table>

**Note:** Sets the signal source for digital output DO 0 (X481.5) of the Terminal Board 30 (TB30).

**Description:**
Sets the signal source for digital output DO 0 (X481.5) of the Terminal Board 30 (TB30).

**Access level:** 1
**Data type:** Unsigned32 / Binary
**Dynamic index:** -
**Func. diagram:** 1790, 9102
**Units group:** -
**Unit selection:** -
**Expert list:** 1
**Expert list:** 1
**Factory setting:** 0
**Not for motor type:** -
**Scaling:** -

### p4030
**BI: TM31 signal source for terminal DO 0 / TM31 S_src DO 0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM31</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Sets the signal source for digital output DO 0 (X542.1, X542.2, X542.3) of Terminal Module 31 (TM31). Digital output 0 of TM31 is a relay output. If the signal at the binector input p4030 is low, then terminal COM 0 (X542.2) is connected to NC 0 (X542.1). This connection also matches the mechanical quiescent setting of the relay. If the signal at the binector input p4030 is high, then terminal COM 0 (X542.2) is connected to NO 0 (X542.3).

**Access level:** 1
**Data type:** Unsigned32 / Binary
**Dynamic index:** -
**Func. diagram:** 1840, 9556
**Units group:** -
**Unit selection:** -
**Expert list:** 1
**Expert list:** 1
**Factory setting:** 0
**Not for motor type:** -
**Scaling:** -

### p4031
**BI: TB30 signal source for terminal DO 1 / TB30 S_src DO 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB30</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Sets the signal source for terminal DO 1 (X481.6) of the Terminal Board 30 (TB30).

**Description:**
Sets the signal source for terminal DO 1 (X481.6) of the Terminal Board 30 (TB30).

**Access level:** 1
**Data type:** Unsigned32 / Binary
**Dynamic index:** -
**Func. diagram:** 9102
**Units group:** -
**Unit selection:** -
**Expert list:** 1
**Expert list:** 1
**Factory setting:** 0
**Not for motor type:** -
**Scaling:** -

### p4031
**BI: TM31 signal source for terminal DO 1 / TM31 S_src DO 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM31</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Sets the signal source for digital output DO 1 (X542.4, X542.5, X542.6) of Terminal Module 31 (TM31). Digital output 1 of TM31 is a relay output. If the signal at the binector input p4031 is low, then terminal COM 1 (X542.5) is connected to NC 1 (X542.4). This connection also matches the mechanical quiescent setting of the relay. If the signal at the binector input p4031 is high, then terminal COM 1 (X542.5) is connected to NO 1 (X542.6).

**Access level:** 1
**Data type:** Unsigned32 / Binary
**Dynamic index:** -
**Func. diagram:** 1840, 9556
**Units group:** -
**Unit selection:** -
**Expert list:** 1
**Expert list:** 1
**Factory setting:** 0
**Not for motor type:** -
**Scaling:** -
### List of Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4032</strong></td>
<td><strong>BI: TB30 signal source for terminal DO 2 / TB30 S_src DO 2</strong></td>
<td>Sets the signal source for terminal DO 2 (X481.7) of the Terminal Board 30 (TB30). <strong>Note:</strong> DO: Digital Output</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td><strong>Func. diagram:</strong> 9102</td>
</tr>
<tr>
<td></td>
<td>P-Group: Commands</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0</td>
</tr>
<tr>
<td><strong>p4033</strong></td>
<td><strong>BI: TB30 signal source for terminal DO 3 / TB30 S_src DO 3</strong></td>
<td>Sets the signal source for terminal DO 3 (X481.8) of the Terminal Board 30 (TB30). <strong>Note:</strong> DO: Digital Output</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td><strong>Func. diagram:</strong> 1790, 9102</td>
</tr>
<tr>
<td></td>
<td>P-Group: Commands</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0</td>
</tr>
<tr>
<td><strong>p4038</strong></td>
<td><strong>BI: TM31 signal source for terminal DI/DO 8 / TM31 S_src DI/DO8</strong></td>
<td>Sets the signal source for terminal DI/DO 8 (X541.2) of Terminal Module 31 (TM31). <strong>Note:</strong> DO: Bidirectional Digital Input/Output</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td><strong>Func. diagram:</strong> 1840, 9560</td>
</tr>
<tr>
<td></td>
<td>P-Group: Commands</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0</td>
</tr>
<tr>
<td><strong>p4039</strong></td>
<td><strong>BI: TM31 signal source for terminal DI/DO 9 / TM31 S_src DI/DO9</strong></td>
<td>Sets the signal source for terminal DI/DO 9 (X541.3) of Terminal Module 31 (TM31). <strong>Note:</strong> DI/DO: Bidirectional Digital Input/Output</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td><strong>Func. diagram:</strong> 9560</td>
</tr>
<tr>
<td></td>
<td>P-Group: Commands</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0</td>
</tr>
<tr>
<td><strong>p4040</strong></td>
<td><strong>BI: TM31 signal source for terminal DI/DO 10 / TM31 S_srcDI/DO10</strong></td>
<td>Sets the signal source for terminal DI/DO 10 (X541.4) of Terminal Module 31 (TM31). <strong>Note:</strong> Prerequisite: The DI/DO must be set as an output (p4028.8 = 1). <strong>DI/DO:</strong> Bidirectional Digital Input/Output</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td><strong>Access level:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td><strong>Func. diagram:</strong> 9562</td>
</tr>
<tr>
<td></td>
<td>P-Group: Commands</td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0</td>
</tr>
</tbody>
</table>
Note: Prerequisite: The DI/DO must be set as an output (p4028.10 = 1).

DI/DO: Bidirectional Digital Input/Output

p4041

BI: TM31 signal source for terminal DI/DO 11 / TM31 S_src DI/DO11

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1840, 9562</td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the signal source for terminal DI/DO 11 (X541.5) of Terminal Module 31 (TM31).

Note: Prerequisite: The DI/DO must be set as an output (p4028.11 = 1).

DI/DO: Bidirectional Digital Input/Output

p4046

TM31 digital outputs, limit current / TM31 DO limit curr

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
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<tr>
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<td>Func. diagram: 9560</td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the limit for the total output voltage of terminals X541.1, X541.2, X541.3 and X541.4 (DI/DO 8 ... 11) of Terminal Module 31 (TM31).

Value:
0: 0.1 A total current limit DI/DO 8 ... 11
1: 1.0 A total current limit DI/DO 8 ... 11

Dependency: Refer to: p4028

Warning: Since the sum of the output currents at terminals X541.1, X541.2, X541.3 and X541.4 is limited, an overcurrent or short circuit at one output terminal can cause a dip in the signal at the other terminals.

r4047

TB30 digital outputs status / TB30 DO status

<table>
<thead>
<tr>
<th>TB30</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
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<tbody>
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<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9102</td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the status of the digital outputs of the Terminal Board 30 (TB30).

Bit field: Bit Signal name 1 signal 0 signal FP
00 DO 0 (X481.5) High Low -
01 DO 1 (X481.6) High Low -
02 DO 2 (X481.7) High Low -
03 DO 3 (X481.8) High Low -

Note: Inversion using p4048 has been taken into account.

DO: Digital Output
### r4047  TM31 digital outputs status / TM31 DO status

**TM31**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DO 0 (X542.1 - 3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X542.4 - 6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the status of the digital outputs of Terminal Module 31 (TM31).

**Note:** Inversion using p4048 has been taken into account.

The setting of the DI/DO as either input or output is of no significance (p4028).

**DO:** Digital Output

**DI/DO:** Bidirectional Digital Input/Output

### p4048  TB30 invert digital outputs / TB30 DO inv

**TB30**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DO 0 (X481.5)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X481.6)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DO 2 (X481.7)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>DO 3 (X481.8)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to invert the signals at the digital outputs of the Terminal Board 30 (TB30).

**Note:** DO: Digital Output

### p4048  TM31 invert digital outputs / TM31 DO inv

**TM31**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DO 0 (X542.1 - 3)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X542.4 - 6)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to invert the signals at the digital outputs of Terminal Module 31 (TM31).

**Note:** DO: Digital Output

**DI/DO:** Bidirectional Digital Input/Output
**List of parameters**

### r4052[0...1]
**CO: TB30 analog inputs, actual input voltage / TB30 Al U\_inp act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB30</td>
<td>Displays the actual input voltage at the analog inputs for Terminal Board 30 (TB30). Note: For p4056[x] = 3 (unipolar current input monitored (+4 mA ... +20 mA)) the following applies: A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min [V]</td>
<td>Max [V]</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### r4052[0...1]
**CO: TM31 analog inputs, current input voltage/current / TM31 Al U/I\_inp**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type: FloatingPoint32</th>
<th>Dynamic index: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Displays the actual input voltage in V when set as voltage input. Displays the actual input current in mA when set as current input and with the load resistor switched in.</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: AI: Analog Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p4053[0...1]
**TB30 analog inputs, smoothing time constant / TB30 Al T\_smooth**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
<th>Data type: FloatingPoint32</th>
<th>Dynamic index: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB30</td>
<td>Sets the smoothing time constant of the 1st-order low pass filter for the analog inputs of the Terminal Board 30 (TB30).</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index: [0] = Al 0 (X482.1/X482.2) [1] = Al 1 (X482.3/X482.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: AI: Analog Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p4053[0...1]
**TM31 analog inputs, smoothing time constant / TM31 Al T\_smooth**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
<th>Data type: FloatingPoint32</th>
<th>Dynamic index: -</th>
<th>Units group: -</th>
<th>Unit selection: -</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Sets the smoothing time constant of the 1st-order low pass filter for the analog inputs of Terminal Module 31 (TM31).</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index: [0] = Al 0 (X521.1/X521.2, S5.0) [1] = Al 1 (X521.3/X521.4, S5.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note: AI: Analog Input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parameters

List of parameters

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Note: AI: Analog Input

**r4055[0...1]**

**CO: TB30 analog inputs, actual value in percent / TB30 AI value in %**

<table>
<thead>
<tr>
<th>TB30</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1790, 9104</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min - [%] Max - [%]</td>
<td>Factory setting - [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the currently referred input value of the analog inputs of Terminal Board 30 (TB30).
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

Note: AI: Analog Input

**r4055[0...1]**

**CO: TM31 analog inputs, actual value in percent / TM31 AI value in %**

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 1840, 9566, 9568</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min - [%] Max - [%]</td>
<td>Factory setting - [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the currently referred input value of the analog inputs of Terminal Module 31 (TM31).
When interconnected, the signals are referred to the reference quantities p200x and p205x.

Index: [0] = AI 0 (X521.1/X521.2, S5.0)
[1] = AI 1 (X521.3/X521.4, S5.1)

Note: AI: Analog Input

**r4056[0...1]**

**TB30 analog inputs, type / TB30 AI type**

<table>
<thead>
<tr>
<th>TB30</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min 4 Max 4</td>
<td>Factory setting 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the type of analog inputs.

Value: 4: Bipolar voltage input (-10 V ... +10 V)

Index: [0] = AI 0 (X482.1/X482.2)
[1] = AI 1 (X482.3/X482.4)

**p4056[0...1]**

**TM31 analog inputs, type / TM31 AI type**

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9566, 9568</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min 0 Max 5</td>
<td>Factory setting 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the type of analog inputs of Terminal Module 31 (TM31).
p4056[x] = 0, 4 correspond to a voltage input (r4052, p4057, p4059 are displayed in V).
p4056[x] = 2, 3, 5 correspond to a current input (r4052, p4057, p4059 are displayed in mA).
In addition, the associated switch S5 must be appropriately set.

AI 0: S5.0 = V --> voltage input, S5.0 = I --> current input (burden resistor = 250 Ohm)
AI 1: S5.1 = V --> voltage input, S5.1 = I --> current input (burden resistor = 250 Ohm)

**Value:**
- 0: Unipolar voltage input (0 V ... +10 V)
- 2: Unipolar current input (0 mA ... +20 mA)
- 3: Unipolar current input monitored (+4 mA to +20 mA)
- 4: Bipolar voltage input (-10 V ... +10 V)
- 5: Bipolar current input (-20 mA to +20 mA)

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Warning:**
The maximum voltage difference between the analog input terminals AI+, AI- and the ground of the TM31 (X520.6, X530.3) may not exceed 35 V.

For operation with the load resistor switched in, the voltage between the differential inputs AI+ and AI- may not exceed 15 V or the impressed current of 60 mA; if this is not carefully observed, the input will be damaged.

**Notice:**
For operation as a voltage input/current input, switch S5.0 or S5.1 must be appropriately set.

**Note:**
When changing p4056, the parameters of the scaling characteristic (p4057, p4058, p4059, p4060) are overwritten with the following default values:
- For p4056 = 0, 4, p4057 is set to 0.0 V, p4058 to 0.0 %, p4059 to 10.0 V and p4060 to 100.0 %.
- For p4056 = 2, 5, p4057 is set to 0.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.
- For p4056 = 3, p4057 is set to 4.0 mA, p4058 to 0.0 %, p4059 to 20.0 mA and p4060 to 100.0 %.

**Description:**
Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V) of the 1st value pair of the characteristic.

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

**Note:**
The parameters for the characteristic do not have a limiting effect.

**Description:**
Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 1st value pair of the characteristic.

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Dependency:**
The unit of this parameter (V or mA) depends on the analog input type.
Refer to: p4056, p4056

**Notice:**
This parameter is automatically overwritten when the analog input type (p4056) is modified.

**Note:**
The parameters for the characteristic do not have a limiting effect.
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4058[0...1]</td>
<td><strong>TB30 analog inputs, characteristic value y1 / TB30 AI char y1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB30</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30). The scaling characteristic for the analog inputs is defined using 2 points. This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>0 = AI 0 (X482.1/X482.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = AI 1 (X482.3/X482.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The parameters for the characteristic do not have a limiting effect.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4058[0...1]</td>
<td><strong>TM31 analog inputs, characteristic value y1 / TM31 AI char y1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM31</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9666, 9668</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1000.00 [%]</td>
<td>1000.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31). The scaling characteristic for the analog inputs is defined using 2 points. This parameter specifies the y coordinate (percentage) of the 1st value pair of the characteristic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>0 = AI 0 (X521.1/X521.2, S5.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = AI 1 (X521.3/X521.4, S5.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong> This parameter is automatically overwritten when the analog input type (p4056) is modified.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The parameters for the characteristic do not have a limiting effect.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4059[0...1]</td>
<td><strong>TB30 analog inputs, characteristic value x2 / TB30 AI char x2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TB30</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-11.000 [V]</td>
<td>11.000 [V]</td>
<td>10.000 [V]</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30). The scaling characteristic for the analog inputs is defined using 2 points. This parameter specifies the x coordinate (input voltage in V) of the 2nd value pair of the characteristic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>0 = AI 0 (X482.1/X482.2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 = AI 1 (X482.3/X482.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The parameters for the characteristic do not have a limiting effect.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4059[0...1]</td>
<td><strong>TM31 analog inputs, characteristic value x2 / TM31 AI char x2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM31</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9666, 9668</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-20.000</td>
<td>20.000</td>
<td>10.000</td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31). The scaling characteristic for the analog inputs is defined using 2 points.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The parameters for the characteristic do not have a limiting effect.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This parameter specifies the x coordinate (input voltage in V or input current in mA) of the 2nd value pair of the characteristic.

**Index:**

- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Dependency:**
The unit of this parameter (V or mA) depends on the analog input type.

Refer to: r4056, p4056

**Notice:**
This parameter is automatically overwritten when the analog input type (p4056) is modified.

**Note:**
The parameters for the characteristic do not have a limiting effect.

### p4060[0...1]

**TB30 analog inputs, characteristic value y2 / TB30 AI char y2**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB30</td>
<td></td>
<td></td>
<td>2</td>
<td>9104</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>-1000.00 [%]</td>
<td>Max</td>
<td>Factory setting</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>1000.00 [%]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling characteristic for the analog inputs of Terminal Board 30 (TB30).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

**Index:**

- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

**Notice:**
The parameters for the characteristic do not have a limiting effect.

### p4060[0...1]

**TM31 analog inputs, characteristic value y2 / TM31 AI char y2**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td></td>
<td></td>
<td>2</td>
<td>9566, 9568</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>-1000.00 [%]</td>
<td>Max</td>
<td>Factory setting</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>1000.00 [%]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling characteristic for the analog inputs of Terminal Module 31 (TM31).

The scaling characteristic for the analog inputs is defined using 2 points.

This parameter specifies the y coordinate (percentage) of the 2nd value pair of the characteristic.

**Index:**

- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Notice:**
This parameter is automatically overwritten when the analog input type (p4056) is modified.

**Note:**
The parameters for the characteristic do not have a limiting effect.

### p4061[0...1]

**TM31 analog inputs, wire breakage monitoring response threshold / TM31 WireBrkThresh**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td></td>
<td></td>
<td>2</td>
<td>9566, 9568</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [mA]</td>
<td>Max</td>
<td>Factory setting</td>
<td>20.00 [mA]</td>
</tr>
<tr>
<td>Max</td>
<td>20.00 [mA]</td>
<td></td>
<td></td>
<td>2.00 [mA]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the response threshold for wire-breakage monitoring of the analog inputs of Terminal Module 31 (TM31).

**Index:**

- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Dependency:**
For the following analog input type, the wire breakage monitoring is active:

- `p4056[x] = 3` (unipolar current input monitored (+4 mA ... +20 mA))

Refer to: r4056, p4056
### p4062[0...1]

**TM31 analog inputs, wire breakage monitoring delay time / TM31 wirebrk t_del**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
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</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>0 [ms]</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the delay time for wire-breakage monitoring of the analog inputs on Terminal Module 31 (TM31).

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

### p4063[0...1]

**TB30 analog inputs offset / TB30 AI offset**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>-20.000 [V]</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000 [V]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the offset for the analog inputs of Terminal Board 30 (TB30). The offset is added to the input signal before the scaling characteristic.

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

### p4063[0...1]

**TM31 analog inputs offset / TM31 AI offset**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>-20.000</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the offset for the analog inputs of Terminal Module 31 (TM31). The offset is added to the input signal before the scaling characteristic.

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

### p4066[0...1]

**TB30 analog inputs, activate absolute value generation / TB30 AI absVal act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Activates the absolute value generation for the analog input signals of the Terminal Board 30 (TB30).

**Value:**
- 0: No absolute value generation
- 1: Absolute value generation switched in

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)
### Parameters

#### List of parameters

#### p4066[0...1]  
**TM31 analog inputs, activate absolute value generation / TM31 Al absVal act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9566, 9568</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Activates the absolute value generation for the analog input signals of Terminal Module 31 (TM31).

**Value:**
- 0: No absolute value generation
- 1: Absolute value generation switched in

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

#### p4067[0...1]  
**BI: TB30 analog inputs invert signal source / TB30 Al inv S_src**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source to invert the analog input signals of the Terminal Board 30 (TB30).

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

#### p4067[0...1]  
**BI: TM31 analog inputs invert signal source / TM31 Al inv S_src**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source to invert the analog input signals of Terminal Module 31 (TM31).

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

#### p4068[0...1]  
**TB30 analog inputs, noise suppression window / TB30 AI window**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9104</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>P-Group: Terminals</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>0.00 [%]</td>
<td>20.00 [%]</td>
<td>0.00 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the noise suppression window of the analog inputs for Terminal Board 30 (TB30).

**Changes less than the window are suppressed.**

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

**Note:**
- AI: Analog Input
**Parameters**

**List of parameters**

### p4068[0...1]
**TM31 analog inputs, window to suppress noise / TM31 AI window**

<table>
<thead>
<tr>
<th><strong>TM31</strong></th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> 9566, 9568</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Terminals</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>20.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the noise suppression window of the analog inputs for Terminal Module 31 (TM31).

Changes less than the window are suppressed.

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

**Note:**
- AI: Analog Input

### p4069[0...1]
**BI: TB30 analog inputs, signal source for enable / TB30 AI enable**

<table>
<thead>
<tr>
<th><strong>TB30</strong></th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
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<td><strong>Data type:</strong> Unsigned32 / Binary</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> 9104</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Terminals</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for enabling the analog inputs of the Terminal Board 30 (TB30).

**Index:**
- [0] = AI 0 (X482.1/X482.2)
- [1] = AI 1 (X482.3/X482.4)

### p4069[0...1]
**BI: TM31 analog inputs, signal source for enable / TM31 AI enable**

<table>
<thead>
<tr>
<th><strong>TM31</strong></th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32 / Binary</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> 9566, 9568</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Terminals</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the enable signal of the analog inputs of Terminal Module 31 (TM31).

**Index:**
- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

### p4071[0...1]
**CI: TB30 analog outputs, signal source / TB30 AO S_src**

<table>
<thead>
<tr>
<th><strong>TB30</strong></th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Unsigned32 / FloatingPoint32</td>
<td><strong>Dynamic index:</strong> -</td>
<td><strong>Func. diagram:</strong> 1790, 9106</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Terminals</td>
<td><strong>Units group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> PERCENT</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the analog outputs of the Terminal Board 30 (TB30).

**Index:**
- [0] = AO 0 (X482.5/X482.6)
- [1] = AO 1 (X482.7/X482.8)

**Note:**
- AO: Analog Output
### List of parameters

#### p4071[0...1] CI: TM31 analog outputs, signal source / TM31 AO S_src

**TM31**
- **Can be changed:** U, T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Descirption:** Sets the signal source for the analog outputs of Terminal Module 31 (TM31).
- **Index:** 0 = AO 0 (X522.1, X522.2, X522.3)  
  1 = AO 1 (X522.4, X522.5, X522.6)
- **Note:** AO: Analog Output

#### r4072[0...1] TB30 analog outputs, output value currently referred / TB30 AO outp_val

**TB30**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** - [%]  
  Max: - [%]
- **Descirption:** Displays the actual referred output value of the analog outputs of the Terminal Board 30 (TB30).
- **Index:** 0 = AO 0 (X482.5/X482.6)  
  1 = AO 1 (X482.7/X482.8)

#### r4072[0...1] TM31 analog outputs, output value currently referred / TM31 AO outp_val

**TM31**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** - [%]  
  Max: - [%]
- **Descirption:** Displays the actual referred output value of the analog outputs of Terminal Module 31 (TM31).
- **Index:** 0 = AO 0 (X522.1, X522.2, X522.3)  
  1 = AO 1 (X522.4, X522.5, X522.6)

#### p4073[0...1] TB30 analog outputs, smoothing time constant / TB30 AO T_smooth

**TB30**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** 0.0 [ms]  
  Max: 1000.0 [ms]
- **Descirption:** Sets the smoothing time constant of the 1st order low pass filter for the analog outputs of the Terminal Board 30 (TB30).
- **Index:** 0 = AO 0 (X482.5/X482.6)  
  1 = AO 1 (X482.7/X482.8)
### List of parameters

#### p4073[0...1] TM31 analog outputs, smoothing time constant / TM31 AO T_smooth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4073[0]</td>
<td>Can be changed: U, T</td>
<td>[0] = AO 0 (X522.1, X522.2, X522.3)</td>
<td>0.0 [ms]</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the smoothing time constant of the 1st-order low pass filter for the analog outputs of Terminal Module 31 (TM31).

**Index:**
- [0] = AO 0 (X522.1, X522.2, X522.3)
- [1] = AO 1 (X522.4, X522.5, X522.6)

#### r4074[0...1] TB30 analog outputs, actual output voltage / TB30 AO U_outp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4074[0]</td>
<td>Can be changed: -</td>
<td>[0] = AO 0 (X482.5/X482.6)</td>
<td>- [V]</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the actual output voltage at the analog outputs of the Terminal Board 30 (TB30).

**Index:**
- [0] = AO 0 (X482.5/X482.6)
- [1] = AO 1 (X482.7/X482.8)

#### r4074[0...1] TM31 analog outputs, current output voltage/current / TM31 AO U/I_outp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4074[0]</td>
<td>Can be changed: -</td>
<td>[0] = AO 0 (X522.1, X522.2, X522.3)</td>
<td>-</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Scaling: p2001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the actual output voltage in V when set as voltage output. Displays the actual output voltage in mA when set as current output.

**Index:**
- [0] = AO 0 (X522.1, X522.2, X522.3)
- [1] = AO 1 (X522.4, X522.5, X522.6)

**Dependency:**
The type of the analog output AO x (voltage or current output) is set using p4076. Refer to: r4076, p4076

**Note:**
AO: Analog Output

#### p4075[0...1] TB30 analog outputs, activate absolute value generation / TB30 AO absVal act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4075[0]</td>
<td>Can be changed: T</td>
<td>[0] = AO 0 (X482.5/X482.6)</td>
<td>0</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Activates the absolute value generation for the analog outputs of the Terminal Board 30 (TB30).

**Value:**
- 0: No absolute value generation
- 1: Absolute value generation switched in

**Index:**
- [0] = AO 0 (X482.5/X482.6)
- [1] = AO 1 (X482.7/X482.8)
**Description:**
Activates the absolute value generation for the analog outputs of Terminal Module 31 (TM31).

**Value:**
0: No absolute value generation
1: Absolute value generation switched in

**Index:**
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

---

**Description:**
Displays the type of analog outputs of the Terminal Board 30 (TB30).

**Value:**
4: Voltage output (-10 V ... +10 V)

**Index:**
[0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

---

**Description:**
Sets the type of analog outputs of Terminal Module 31 (TM31).

**Value:**
0: Current output (0 mA ... +20 mA)
1: Voltage output (0 V ... +10 V)
2: Current output (+4 mA ... +20 mA)
3: Current output (-20 mA ... +20 mA)
4: Voltage output (-10 V ... +10 V)

**Index:**
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

**Dependencies:**
Refer to: p4077, p4078, p4080

**Note:**
When changing p4076, the parameters of the scaling characteristic (p4077, p4078, p4079, p4080) are overwritten with the following default values:
For p4076 = 0, 3, p4077 is set to 0.0 %, p4078 to 0.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.
For p4076 = 1, 4, p4077 is set to 0.0 %, p4078 to 0.0 V, p4079 to 100.0 % and p4080 to 10.0 V.
For p4076 = 2, p4077 is set to 0.0 %, p4078 to 4.0 mA, p4079 to 100.0 % and p4080 to 20.0 mA.
### List of parameters

#### p4077[0...1] TB30 analog outputs, characteristic value x1 / TB30 AO char x1

**Description:**
Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

**Index:**
- [0] = AO 0 (X482.5/X482.6)
- [1] = AO 1 (X482.7/X482.8)

**Dependency:**
Refer to: r4076, p4076

**Notice:**
This parameter is automatically overwritten when changing p4076 (type of analog outputs).

**Note:**
The parameters for the characteristic do not have a limiting effect.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4077[0]</td>
<td>TB30 AO char x1</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>9106</td>
</tr>
</tbody>
</table>

#### p4077[0...1] TM31 analog outputs, characteristic value x1 / TM31 AO char x1

**Description:**
Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

**Index:**
- [0] = AO 0 (X522.1, X522.2, X522.3)
- [1] = AO 1 (X522.4, X522.5, X522.6)

**Dependency:**
Refer to: p4076

**Notice:**
This parameter is automatically overwritten when changing p4076 (type of analog outputs).

**Note:**
The parameters for the characteristic do not have a limiting effect.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4077[0]</td>
<td>TM31 AO char x1</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>9572</td>
</tr>
</tbody>
</table>

#### p4078[0...1] TB30 analog outputs, characteristic value y1 / TB30 AO char y1

**Description:**
Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).

**Index:**
- [0] = AO 0 (X482.5/X482.6)
- [1] = AO 1 (X482.7/X482.8)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4078[0]</td>
<td>TB30 AO char y1</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>9106</td>
</tr>
</tbody>
</table>

#### p4078[0...1] TM31 analog outputs, characteristic value y1 / TM31 AO char y1

**Description:**
Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).

**Index:**
- [0] = AO 0 (X522.1, X522.2, X522.3)
- [1] = AO 1 (X522.4, X522.5, X522.6)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4078[0]</td>
<td>TM31 AO char y1</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>9572</td>
</tr>
</tbody>
</table>
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 1st value pair of the characteristic.

**Index:**
[0] = AO 0 (X522.1, X522.2, X522.3)  
[1] = AO 1 (X522.4, X522.5, X522.6)

**Dependency:**
The unit of this parameter (V or mA) depends on the analog output type.
Refer to: r4076, p4076

**Notice:**
This parameter is automatically overwritten when changing p4076 (type of analog outputs).

**Note:**
The parameters for the characteristic do not have a limiting effect.

---

### p4079[0...1] TB30 analog outputs, characteristic value x2 / TB30 AO char x2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB30</strong></td>
<td>Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).</td>
</tr>
</tbody>
</table>

The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the x coordinate (percentage) of the 2nd value pair of the characteristic.

**Index:**
[0] = AO 0 (X482.5/X482.6)  
[1] = AO 1 (X482.7/X482.8)

**Note:**
The parameters for the characteristic do not have a limiting effect.

---

### p4080[0...1] TB30 analog outputs, characteristic value y2 / TB30 AO char y2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TB30</strong></td>
<td>Sets the scaling characteristic for the analog outputs of Terminal Board 30 (TB30).</td>
</tr>
</tbody>
</table>

The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V) of the 2nd value pair of the characteristic.

**Index:**
[0] = AO 0 (X482.5/X482.6)  
[1] = AO 1 (X482.7/X482.8)

**Note:**
The parameters for the characteristic do not have a limiting effect.
Description:
Sets the scaling characteristic for the analog outputs of Terminal Module 31 (TM31).
The scaling characteristic for the analog outputs is defined using 2 points.
This parameter specifies the y coordinate (output voltage in V or output current in mA) of the 2nd value pair of the characteristic.

Index:
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Dependency:
The unit of this parameter (V or mA) depends on the analog output type.
Refer to: r4076, p4076

Notice:
This parameter is automatically overwritten when changing p4076 (type of analog outputs).

Note:
The parameters for the characteristic do not have a limiting effect.

Description:
Sets the signal source for inverting the analog output signals of Terminal Board 30 (TB30).

Index:
[0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)

Description:
Sets the signal source for inverting the analog output signals of Terminal Module 31 (TM31).

Index:
[0] = AO 0 (X522.1, X522.2, X522.3)
[1] = AO 1 (X522.4, X522.5, X522.6)

Description:
Sets the offset for the analog outputs of Terminal Board 30 (TB30).
The offset is added to the output signal after the scaling characteristic.

Index:
[0] = AO 0 (X482.5/X482.6)
[1] = AO 1 (X482.7/X482.8)
### p4083[0...1] TM31 analog outputs, offset / TM31 AO offset

**TM31**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** -20.000
- **Max:** 20.000

**Description:**
Sets the offset for the analog outputs of Terminal Module 31 (TM31). The offset is added to the output signal after the scaling characteristic.

**Index:**
- [0] = AO 0 (X522.1, X522.2, X522.3)
- [1] = AO 1 (X522.4, X522.5, X522.6)

**Dependency:**
The unit of this parameter (V or mA) depends on the analog input type.
Refer to: r4076, p4076

**Note:**
This means, for example, the offset of a downstream isolating amplifier can be compensated.

### p4095 TB30 digital inputs, simulation mode / TB30 DI sim_mode

**TB30**

- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** Commands
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the simulation mode for the digital inputs of the Terminal Board 30 (TB30).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X481.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X481.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X481.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X481.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
The setpoint for the input signals is specified using p4096.
Refer to: p4096

**Warning:**
A drive that is moved by simulating the inputs of a Terminal Board is brought to a standstill while the Terminal Module is being activated or de-activated.

**Note:**
This parameter is not saved when data is backed-up (p0971, p0977).
DI: Digital Input

### p4095 TM31 digital inputs, simulation mode / TM31 DI sim_mode

**TM31**

- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the simulation mode for the digital inputs of Terminal Module 31 (TM31).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 0 (X520.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X520.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X520.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X520.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
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<td>04</td>
<td>DI 4 (X530.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
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<td>05</td>
<td>DI 5 (X530.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
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<td>06</td>
<td>DI 6 (X530.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
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Parameters

List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory setting</th>
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<td>Sets the setpoint for the input signals in the simulation mode of the digital inputs of the Terminal Board 30 (TB30).</td>
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<td>p4096 TM31 digital inputs, simulation mode setpoint / TM31 DI sim setp</td>
<td>Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 31 (TM31).</td>
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</table>
### Parameters

**List of parameters**

**Dependency:** The simulation of a digital input is selected using p4095.
Refer to: p4095

**Note:** This parameter is not saved when data is backed-up (p0971, p0977).
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

#### p4097[0...1]  TB30 analog inputs simulation mode / TB30 AI sim_mode

**TB30**

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<tr>
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<td>Func. diagram:</td>
<td>9104</td>
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<td>Terminals</td>
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<td>-</td>
<td>Unit selection:</td>
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<td>-</td>
<td>Scaling:</td>
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<td>Expert list:</td>
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</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
<td></td>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>[0] = AI 0 (X482.1/X482.2)</td>
<td>-</td>
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<td>1</td>
<td>0</td>
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<tr>
<td>[1] = AI 1 (X482.3/X482.4)</td>
<td>-</td>
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</tbody>
</table>

**Description:** Sets the simulation mode for the analog inputs of the Terminal Board 30 (TB30).

**Value:**
0: Terminal evaluation for analog input x
1: Simulation for analog input x

**Index:**

| [0] = AI 0 (X482.1/X482.2) |
| [1] = AI 1 (X482.3/X482.4) |

**Dependency:** The setpoint for the input voltage is specified via p4098.
Refer to: p4098

**Note:** This parameter is not saved when data is backed-up (p0971, p0977).
AI: Analog Input

#### p4097[0...1]  TM31 analog inputs simulation mode / TM31 AI sim_mode

**TM31**

<table>
<thead>
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<td><strong>Index:</strong></td>
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<td>Min:</td>
<td>Max</td>
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<tr>
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<td>1</td>
<td>0</td>
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</tr>
<tr>
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<td>-</td>
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</table>

**Description:** Sets the simulation mode for the analog inputs of Terminal Module 31 (TM31).

**Value:**
0: Terminal evaluation for analog input x
1: Simulation for analog input x

**Index:**

| [0] = AI 0 (X521.1/X521.2, S5.0) |
| [1] = AI 1 (X521.3/X521.4, S5.1) |

**Dependency:** The setpoint for the input voltage is specified via p4098.
Refer to: p4098

**Note:** This parameter is not saved when data is backed-up (p0971, p0977).
AI: Analog Input

#### p4098[0...1]  TB30 analog inputs simulation mode setpoint / TB30 AI sim setp

**TB30**

<table>
<thead>
<tr>
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<th>U, T</th>
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<td>-</td>
<td>Func. diagram:</td>
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<td>-</td>
<td>Unit selection:</td>
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<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
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</tr>
<tr>
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<td></td>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>-11.000 [V]</td>
<td>11.000 [V]</td>
<td>0.000 [V]</td>
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**Description:** Sets the setpoint for the input voltage in the simulation mode of the analog inputs of Terminal Board 30 (TB30).

**Index:**

| [0] = AI 0 (X482.1/X482.2) |
| [1] = AI 1 (X482.3/X482.4) |

**Dependency:** The simulation of an analog input is selected using p4097.
Refer to: p4097
### List of parameters

**Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
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<td><strong>TM31</strong></td>
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<td>This parameter is not saved when data is backed-up (p0971, p0977).</td>
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</table>

**AI: Analog Input**

**Description:**
Sets the setpoint for the input value in simulation mode of the analog inputs of Terminal Module 31 (TM31).

**Index:**

- \[0\] = AI 0 (X521.1/X521.2, S5.0)
- \[1\] = AI 1 (X521.3/X521.4, S5.1)

**Dependency:**
The simulation of an analog input is selected using p4097.

If AI x is parameterized as voltage input (p4056), then the setpoint is a voltage in V.
If AI x is parameterized as current input (p4056), then the setpoint is a current in mA.

Refer to: r4056, p4056, p4097

**Note:**
This parameter is not saved when data is backed-up (p0971, p0977).

**AI: Analog Input**

**Description:**
Sets the sampling time for the inputs and outputs of Terminal Board 30 (TB30).

**Index:**

- \[0\] = Digital inputs/outputs (DI/DO)
- \[1\] = Analog inputs (AI)
- \[2\] = Analog outputs (AO)

**Dependency:**
The parameter can only be modified for p0009 = 3, 29.
The sampling times can only be set as an integer multiple of the basic sampling time (r0110, r0111).

Refer to: p0009, r0110, r0111

**Note:**
The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).
For clock cycle synchronous PROFIBUS operation, the TB30 hardware (e.g. A/D converter) is operated with the PROFIBUS clock cycle (r2064[1]). This clock cycle is also kept after the PROFIBUS connection has been exited up to the next time that the Control Unit is powered down. In this case, a faster sampling time than the PROFIBUS clock cycle is not practical in p4099[0...2].

### Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Dependency</th>
<th>Note</th>
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<tbody>
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<tr>
<td>Scaling:</td>
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</tr>
<tr>
<td><strong>Min</strong></td>
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<tr>
<td><strong>Max</strong></td>
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<tr>
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<td>[1] 4000.00 [µs]</td>
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<td>[2] 4000.00 [µs]</td>
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</table>

**AI: Analog Input**

**Description:**
Sets the sampling time for the inputs and outputs of Terminal Module 31 (TM31).

**Index:**

- \[0\] = Digital inputs/outputs (DI/DO)
- \[1\] = Analog inputs (AI)
- \[2\] = Analog outputs (AO)

**Dependency:**
The parameter can only be modified for p0009 = 3, 29.
For clock cycle synchronous PROFIBUS operation, the TM30 hardware (e.g. A/D converter) is operated with the PROFIBUS clock cycle (r2064[1]). This clock cycle is also kept after the PROFIBUS connection has been exited up to the next time that the Control Unit is powered down. In this case, a faster sampling time than the PROFIBUS clock cycle is not practical in p4099[0...2].

**Note:**
The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).
For clock cycle synchronous PROFIBUS operation, the TM30 hardware (e.g. A/D converter) is operated with the PROFIBUS clock cycle (r2064[1]). This clock cycle is also kept after the PROFIBUS connection has been exited up to the next time that the Control Unit is powered down. In this case, a faster sampling time than the PROFIBUS clock cycle is not practical in p4099[0...2].

### Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
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<tbody>
<tr>
<td><strong>p4099[0...2]</strong></td>
<td>TM31 inputs/outputs, sampling time / TM31 I/O t_sample</td>
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<td></td>
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<tr>
<td><strong>Max</strong></td>
<td>5000.00 [µs]</td>
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<tr>
<td><strong>Factory setting</strong></td>
<td>4000.00 [µs]</td>
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<td></td>
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</table>

**AI: Analog Input**

**Description:**
Sets the sampling time for the inputs and outputs of Terminal Module 31 (TM31).

**Index:**

- \[0\] = Digital inputs/outputs (DI/DO)
- \[1\] = Analog inputs (AI)
- \[2\] = Analog outputs (AO)
Dependency: The parameter can only be modified for p0009 = 3, 29.
The sampling times can only be set as an integer multiple of the DRIVE-CLiQ clock cycle.
The minimum permissible sampling time is 125µs.
Refer to: p0009, r0110, r0111

Notice: The sampling times entered in index 0 (digital inputs/outputs) and index 2 (analog outputs) must always be greater than or equal to the sampling time in index 1 (analog inputs).

Note: The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0). Parameter p4099[0] must never be equal to zero.

### p4100[0...11] TM150 sensor type / TM150 sensor type

<table>
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<td>Units group: -</td>
<td>Unit selection: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td></td>
</tr>
<tr>
<td>0</td>
<td>6</td>
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</tbody>
</table>

Description: Sets the sensor type for Terminal Module 150 (TM150)

This means that the temperature sensor type is selected and the evaluation is switched in.

Value: 0: Evaluation disabled
1: PTC thermistor
2: KTY84
4: Bimetallic NC contact
5: PT100
6: PT1000

Index: [0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10

Notice: For p4102[0...23] = 251 °C, evaluation of the corresponding threshold is deactivated.
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:
To activate the corresponding alarm or fault, p4102[0...23] must be set <= 250 °C.

Note: The temperature sensors are connected to the following terminals:
X531 = channel 0 (for 2x2 conductor evaluation, additionally channel 6)
X532 = channel 1 (for 2x2 conductor evaluation, additionally channel 7)
X533 = channel 2 (for 2x2 conductor evaluation, additionally channel 8)
X534 = channel 3 (for 2x2 conductor evaluation, additionally channel 9)
X535 = channel 4 (for 2x2 conductor evaluation, additionally channel 10)
X536 = channel 5 (for 2x2 conductor evaluation, additionally channel 11)
Details on the wiring are included in the parameter description for p4108.

### p4100 TM31 sensor type / TM31 sensor type

<table>
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<tr>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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<tr>
<td>0</td>
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</tr>
</tbody>
</table>

Description: Sets the sensor type for Terminal Module 31 (TM31)
### Parameters

#### List of parameters

This means that the temperature sensor type is selected and the evaluation is switched in.

**Value:**
- 0: Evaluation disabled
- 1: PTC thermistor
- 2: KTY84

**Notice:**
For p4102[0...1] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100 = 1), the following applies:
To activate the corresponding alarm or fault, p4102[0...1] must be set <= 250 °C.

**Note:**
The temperature sensor is connected at terminals X522.7(+) and X522.8(-).

---

### r4101[0...11]

**TM150 sensor resistance / TM150 R_sensor**

<table>
<thead>
<tr>
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</thead>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** 9626, 9627

- **P-Group:** Terminals
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1

- **Min** - [ohm]
- **Max** - [ohm]
- **Factory setting** - [ohm]

**Description:**
Displays the actual resistance value of the temperature sensor connected at the Terminal Module.

**Index:**
- [0] = Temperature channel 0
- [1] = Temperature channel 1
- [2] = Temperature channel 2
- [3] = Temperature channel 3
- [4] = Temperature channel 4
- [5] = Temperature channel 5
- [6] = Temperature channel 6
- [7] = Temperature channel 7
- [8] = Temperature channel 8
- [9] = Temperature channel 9
- [10] = Temperature channel 10

**Note:**
The maximum measurable resistance value is approx. 2500 Ohm.

For 1x2 and 2x2 conductor evaluation:

The actual sensor resistance is displayed in this parameter (i.e. the cable resistance (p4110) is taken into account).

The temperature sensors are connected to the following terminals:
- X531 = channel 0 (for 2x2 conductor evaluation, additionally channel 6)
- X532 = channel 1 (for 2x2 conductor evaluation, additionally channel 7)
- X533 = channel 2 (for 2x2 conductor evaluation, additionally channel 8)
- X534 = channel 3 (for 2x2 conductor evaluation, additionally channel 9)
- X535 = channel 4 (for 2x2 conductor evaluation, additionally channel 10)
- X536 = channel 5 (for 2x2 conductor evaluation, additionally channel 11)

Details on the wiring are included in the parameter description for p4108.

---

### r4101

**TM31 sensor resistance / TM31 R_sensor**

<table>
<thead>
<tr>
<th>TM31</th>
</tr>
</thead>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

- **Data type:** Unsigned16
- **Dynamic index:** -
- **Func. diagram:** 9576

- **P-Group:** Terminals
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1

- **Min** - [ohm]
- **Max** - [ohm]
- **Factory setting** - [ohm]

**Description:**
Displays the actual resistance value of the temperature sensor connected at the Terminal Module.

**Note:**
The maximum measurable resistance value is approx. 2170 Ohm.

The temperature sensor is connected at terminals X522.7(+) and X522.8(-).
**Description:**
Sets the fault threshold/alarm threshold for Terminal Module 150 (TM150).

For alarms (even indices [0, 2, 4 ... 22]), the following applies:
- The corresponding alarm is initiated, if the temperature actual value associated with a temperature channel exceeds the associated alarm threshold (r4105[x] > p4102[2x]). In addition, the timer is started (p4103[x]).
- The alarm remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x] - hysteresis (p4118[x]).

For faults (uneven indices [1, 3, 5 ... 23]), the following applies:
- The corresponding fault is initiated, if the temperature actual value associated with a temperature channel exceeds the associated fault threshold (r4105[x] > p4102[2x+1] or the associated timer (p4103[x]) has expired.
- The fault remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x+1] - hysteresis (p4118[x])) and the fault has been acknowledged.

**Index:**
- **[0]** = Channel 0 alarm threshold (A35211)
- **[1]** = Channel 0 fault threshold (F35207)
- **[2]** = Channel 1 alarm threshold (A35212)
- **[3]** = Channel 1 fault threshold (F35208)
- **[4]** = Channel 2 alarm threshold (A35213)
- **[5]** = Channel 2 fault threshold (F35209)
- **[6]** = Channel 3 alarm threshold (A35214)
- **[7]** = Channel 3 fault threshold (F35210)
- **[8]** = Channel 4 alarm threshold (A35410)
- **[9]** = Channel 4 fault threshold (F35400)
- **[10]** = Channel 5 alarm threshold (A35411)
- **[11]** = Channel 5 fault threshold (F35401)
- **[12]** = Channel 6 alarm threshold (A35412)
- **[13]** = Channel 6 fault threshold (F35402)
- **[14]** = Channel 7 alarm threshold (A35413)
- **[15]** = Channel 7 fault threshold (F35403)
- **[16]** = Channel 8 alarm threshold (A35414)
- **[17]** = Channel 8 fault threshold (F35404)
- **[18]** = Channel 9 alarm threshold (A35415)
- **[19]** = Channel 9 fault threshold (F35405)
- **[20]** = Channel 10 alarm threshold (A35416)
- **[21]** = Channel 10 fault threshold (F35406)
- **[22]** = Channel 11 alarm threshold (A35417)
- **[23]** = Channel 11 fault threshold (F35407)

**Dependency:**
Refer to: p4103, r4104, r4105, p4118

**Caution:**
Faults F35207 ... F35210 and F35400 ... F35407 only result in the drive being shut down if at least one BICO interconnection exists between the drive and the TM150.

For p4102[0...23] = 251 °C, evaluation of the corresponding threshold is deactivated.

For sensor type "PTC thermistor" (p4100[0...11] = 1), the following applies:
To activate the corresponding alarm or fault, p4102[0...23] must be set <= 250 °C.

**Note:**
The hysteresis can be set in p4118[0...11].

<table>
<thead>
<tr>
<th>p4102[0...23]</th>
<th>TM150 fault threshold/alarm threshold / TM150 F/A_thresh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150</strong></td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 1</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td><strong>Min</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>Min</td>
<td>99 [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>251 [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>251 [°C]</td>
</tr>
</tbody>
</table>
p4102[0...1]  TM31 fault threshold/alarm threshold / TM31 F/A_thresh

TM31

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>9576</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
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<tr>
<td>Min</td>
<td>-48 °C</td>
<td>Max</td>
<td>251 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Alarm threshold
- [1] = Fault threshold

**Dependency:**
Refer to: r4104

**Caution:**
- Fault F35207 only causes the drive to be shut down if there is at least one BICO interconnection between the drive and TM31.
- For p4102[0...1] = 251 °C, evaluation of the corresponding threshold is deactivated.
- For sensor type "PTC thermistor" (p4100 = 1), the following applies:
  - To activate the alarm or fault, p4102[0...1] must be set <= 250 °C.

**Description:**
Sets the fault threshold/alarm threshold for Terminal Module 31 (TM31).

A35211 is initiated, if the temperature actual value r4105[0] > p4102[0]
F35207 is initiated if the temperature actual value r4105[0] > p4102[1] or timer p4103[0] has expired

For alarm A35211 the following applies:
- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[0] - hysteresis).

For fault F35207 the following applies:
- Remains until the temperature actual value (r4105) reaches or falls below the value (p4102[1] - hysteresis) and the fault has been acknowledged.
- The hysteresis value is 5 K and cannot be changed by the user.

**p4103[0...11]  TM150 delay time / TM150 t_delay**

**TM150**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>9626, 9627</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Motor</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [s]</td>
<td>Max</td>
<td>600.0 [s]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Temperature channel 0
- [1] = Temperature channel 1
- [2] = Temperature channel 2
- [3] = Temperature channel 3
- [4] = Temperature channel 4
- [5] = Temperature channel 5
- [6] = Temperature channel 6
- [7] = Temperature channel 7
- [8] = Temperature channel 8
- [9] = Temperature channel 9

**Description:**
Sets the delay time for the output of the fault for the Terminal Module 150 (TM150).

The timer is started when the alarm threshold (e.g. p4102[0]) is exceeded.

If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then the corresponding fault is output.

The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.

For sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:
- If the fault threshold (e.g. p4102[1]) is exceeded before the delay time has expired, then the corresponding fault is immediately output.

For sensor type "PTC thermistor", "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:
- Alarm and fault threshold simultaneously respond. The fault is only issued after the delay time has expired.
[10] = Temperature channel 10

Dependency:
Refer to: p4102, r4104, r4105, p4118

Warning:
The fault F35207 ... F35210 and F35400 ... 35407 only results in the drive being shut down if at least one BICO interconnection exists between the drive and the TM150.

Note:
For p4103 = 0 s and sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:
- The corresponding fault can only be initiated via the fault threshold (output of the timer is always a logical 0).
For p4103 = 0 s and sensor type "PTC thermistor", "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:
- The corresponding alarm and fault are simultaneously output (delay time = 0 s).

**p4103**

**TM31 temperature evaluation delay time / TM31 temp t_delay**

| Data type: | FloatingPoint32 |
| P-Group: | Motor |
| Not for motor type: | - |
| Min | 0.000 [ms] |
| Max | 600000.000 [ms] |

**Description:**
Sets the delay time for the output of the fault for the Terminal Module 31 (TM31).
The timer is started when the alarm threshold (p4102[0]) is exceeded.
If the delay time has expired and the alarm threshold has, in the meantime, not been fallen below, then fault F35207 is output.
The fault can be acknowledged, if, after the delay time has expired, the alarm threshold is again fallen below.
For sensor type "KTY84" (p4100 = 2), the following applies:
If the fault threshold (p4102[1]) is exceeded before the delay time has expired, then fault F35207 is immediately output.
For sensor type "PTC thermistor" (p4100 = 1), the following applies:
- Alarm and fault threshold simultaneously respond. The fault is only issued after the delay time has expired.

**Dependency:**
Refer to: r4104

**Warning:**
Fault F35207 only causes the drive to be shut down if there is at least one BICO interconnection between the drive and TM31.

**Note:**
With p4103 = 0 ms, the timer is de-activated and only the fault threshold is effective.

**r4104.0...23**

**BO: TM150 temperature evaluation, status / TM150 temp status**

| Data type: | Unsigned32 |
| P-Group: | Terminals |
| Min | - |
| Max | - |

**Description:**
Display and binector output for the status for the Terminal Module 150 (TM150).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Channel 0 alarm present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>01</td>
<td>Channel 0 fault present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>02</td>
<td>Channel 1 alarm present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>03</td>
<td>Channel 1 fault present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>04</td>
<td>Channel 2 alarm present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>05</td>
<td>Channel 2 fault present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>06</td>
<td>Channel 3 alarm present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>07</td>
<td>Channel 3 fault present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>08</td>
<td>Channel 4 alarm present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
<tr>
<td>09</td>
<td>Channel 4 fault present</td>
<td>Yes</td>
<td>No</td>
<td>9626</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

10 Channel 5 alarm present Yes No 9626
11 Channel 5 fault present Yes No 9626
12 Channel 6 alarm present Yes No 9627
13 Channel 6 fault present Yes No 9627
14 Channel 7 alarm present Yes No 9627
15 Channel 7 fault present Yes No 9627
16 Channel 8 alarm present Yes No 9627
17 Channel 8 fault present Yes No 9627
18 Channel 9 alarm present Yes No 9627
19 Channel 9 fault present Yes No 9627
20 Channel 10 alarm present Yes No 9627
21 Channel 10 fault present Yes No 9627
22 Channel 11 alarm present Yes No 9627
23 Channel 11 fault present Yes No 9627

Dependency: Refer to: p4102, p4103, r4105, p4118

r4104.0...1 BO: TM31 temperature evaluation, status / TM31 temp status

TM31 Can be changed: - Calculated: - Access level: 1
Data type: Unsigned16 Dynamic index: - Func. diagram: 1840, 9576
P-Group: Terminals Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max - Factory setting -

Description: Display and binector output for the status for the Terminal Module 31 (TM31).

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Alarm is present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fault is present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p4102

r4105[0...11] CO: TM150 temperature actual value / TM150 temp_act val

TM150 Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dynamic index: - Func. diagram: 9626, 9627
P-Group: Terminals Units group: - Unit selection: -
Not for motor type: - Scaling: p2006 Expert list: 1
Min - °C - Max - °C Factory setting - - °C

Description: Displays the temperature actual value for the Terminal Module 150 (TM150)

Index:

[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10

Dependency: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0...11] = 1, 4), the following applies:
- below the nominal response temperature, r4105[0...11] = -50 °C.
- above the nominal response temperature, r4105[0...11] = 250 °C.
For sensor type "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6) the following applies:
- the displayed value corresponds to the temperature actual value.

Refer to: p4100, p4111, r4112, r4113, r4114
Note: \( r4105[0...11] = -300 \, ^\circ C \) is displayed in the following cases:
- temperature actual value invalid (F35920 ... F35931 output).
- no sensor selected (p4100[0...11] = 0).

The temperature actual values can be grouped using \( p4111[0...2] \) and the maximum value, minimum value as well as the average value for each group evaluated (\( r4112[0...2] \), \( r4113[0...2] \), \( r4114[0...2] \)).

**r4105**

**CO:** TM31 temperature actual value / TM31 temp_act val

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index:</td>
<td>Func. diagram: 1840, 9576</td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Units group:</td>
<td>Unit selection:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: p2006</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [°C]</td>
<td>- [°C]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the temperature actual value for the Terminal Module 31 (TM31)

**Dependency:** For sensor type "PTC thermistor" (\( p4100 = 1 \)), the following applies:
- below the nominal response temperature, \( r4105 = -50 \, ^\circ C \).
- above the nominal response temperature, \( r4105 = 250 \, ^\circ C \).

For sensor type "KTY84" (\( p4100 = 2 \)), the following applies:
- the displayed value corresponds to the temperature actual value.

Refer to: p4100

**Note:** \( r4105 = -300 \, ^\circ C \) is displayed in the following cases:
- temperature actual value invalid (F35920 output).
- no sensor selected (\( p4100 = 0 \)).

The temperature sensor is connected at terminals X522.7(+) and X522.8(-).

**p4108[0...5]**

**TM150 terminal block measuring method / TM150 meas method**

<table>
<thead>
<tr>
<th>TM150</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index:</td>
<td>Func. diagram: 9625, 9626, 9627</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the measuring method for the terminal block X531 ... X536 for the Terminal Module 150 (TM150).

Re \( p4108[0...5] = 0 \) (1x2 wire evaluation):
- the temperature sensor is connected at terminals 1(+) and 2(-).

Re \( p4108[0...5] = 1 \) (2x2 wire evaluation):
- The first temperature sensor is connected at terminals 1(+) and 2(-).
- The second temperature sensor is connected at terminals 3(+) and 4(-).

Re \( p4108[0...5] = 2 \) (3 wire evaluation):
- the temperature sensor is connected at terminals 3(+) and 4(-).
- the measuring conductor is connected at terminal 1(+) and 4(-).
- terminals 2(-) and 4(-) must be jumpered.

Re \( p4108[0...5] = 3 \) (4 wire evaluation):
- the temperature sensor is connected at terminals 3(+) and 4(-).
- the measuring conductor is connected at terminals 1(+) and 2(-).

**Value:**
- 0: 1x2 conductor evaluation
- 1: 2x2 conductor evaluation
- 2: 3 conductor evaluation
- 3: 4 conductor evaluation

**Index:**
- [0] = X531
- [1] = X532
- [2] = X533
- [3] = X534
The temperature sensors are connected to the following terminals:

X531 = channel 0 (for 2×2 conductor evaluation, additionally channel 6)
X532 = channel 1 (for 2×2 conductor evaluation, additionally channel 7)
X533 = channel 2 (for 2×2 conductor evaluation, additionally channel 8)
X534 = channel 3 (for 2×2 conductor evaluation, additionally channel 9)
X535 = channel 4 (for 2×2 conductor evaluation, additionally channel 10)
X536 = channel 5 (for 2×2 conductor evaluation, additionally channel 11)

Re p4108[0...5] = 0, 2, 3 (1×2, 3, 4 wire evaluation):
The temperature channel belonging to the terminal block with the higher number is automatically deactivated (e.g. for X531 with 3-wire evaluation, channel 6 is deactivated).

**Description:**
Setting to start the measurement of the conductor resistance for a channel for the Terminal Module 150 (TM150).

For a 2 conductor evaluation, the total conductor resistance is measured and saved. During the temperature evaluation, the temperature actual value is automatically calibrated using the measured cable resistance.

**Procedure:**
1. Select the measuring method (1×2/2×2) for the corresponding terminal block (p4108[0...5] = 0, 1).
2. Set the required sensor type for the corresponding channel (p4100[x] = 1 ... 6, x = 0...5 or 0...11).
3. Jumper the sensor to be connected (short-circuit the sensor conductor close to the sensor).
4. Connect the sensor conductors to the appropriate terminals 1(+), 2(-) or 3(+), 4(-).
5. For the corresponding channel, start the measurement of the conductor resistance (p4109[x] = 1).
6. After p4109[x] = 0, check the measured resistance value in p4110[x].
7. Remove the jumper across the temperature sensor.

**Value:**
0: Inactive
1: Start

**Index:**

0 = Temperature channel 0
1 = Temperature channel 1
2 = Temperature channel 2
3 = Temperature channel 3
4 = Temperature channel 4
5 = Temperature channel 5
6 = Temperature channel 6
7 = Temperature channel 7
8 = Temperature channel 8
9 = Temperature channel 9
10 = Temperature channel 10
11 = Temperature channel 11

**Dependency:**
Refer to: p4100, p4108, p4110

**Notice:**
Conductor resistance measurement is only possible for 1x2 or 2x2 conductor evaluation (p4108[0...5] = 0, 1).

**Note:**
The conductor resistance value can be also directly entered into p4110[0...11].

The automatic conductor calibration for 1x2 and 2x2 conductor evaluation is always performed with the value in p4110[0...11].
**Description:**
Sets and displays the cable resistance for Terminal Module 150 (TM150).
The value is used for the automatic cable calibration.
The value is automatically set by starting the conductor resistance measurement (p4109[0...11]) of the corresponding channel.

**Index:**
- [0] = Temperature channel 0
- [1] = Temperature channel 1
- [2] = Temperature channel 2
- [3] = Temperature channel 3
- [4] = Temperature channel 4
- [5] = Temperature channel 5
- [6] = Temperature channel 6
- [7] = Temperature channel 7
- [8] = Temperature channel 8
- [9] = Temperature channel 9
- [10] = Temperature channel 10

**Dependency:**
Refer to: p4109

**Notice:**
Conductor resistance measurement is only possible for 1x2 or 2x2 conductor evaluation (p4108[0...5] = 0, 1).

**Note:**
Automatic conductor calibration is deactivated using p4110[0...11] = 0.

---

**Description:**
Assigns the temperature channels to groups for the Terminal Module 150 (TM150)
For each group, the following calculated values are provided from the temperature actual values (r4105[0...11]):
- Maximum value (r4112[0...2])
- Minimum value (r4113[0...2])
- Average value (r4114[0...2])

**Index:**
- [0] = Group 0
- [1] = Group 1

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Temperature channel 0</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Temperature channel 1</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Temperature channel 2</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Temperature channel 3</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Temperature channel 4</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Temperature channel 5</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Temperature channel 6</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Temperature channel 7</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Temperature channel 8</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Temperature channel 9</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Temperature channel 10</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Temperature channel 11</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r4105, r4112, r4113, r4114
Caution: When forming groups, it must be ensured that in one particular group, only temperature channels with the following sensor types are included:
- "KTY84", "PT100", "PT1000" (p4100[0...11] = 2, 5, 6), real temperature actual value
  or alternatively
- "PTC thermistor", "bimetallic NC contact" (p4100[0...11] = 1, 4), fictitious temperature actual value (-50 °C, 250 °C)
If these sensor types are combined within one group, then the calculated values for maximum, minimum and average value will be falsified.

Note: Active and inactive temperature channels can be included in one group. However, when calculating the values (r4112, r4113, r4114) only the active temperature channels with valid actual value are taken into account (r4105[0...11] not equal to -300 °C).

r4112[0...2] CO: TM150 group temperature actual value maximum value / TM150 grp temp max

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display and connector output for the maximum value of each group for the Terminal Module 150 (TM150). This value is calculated from the actual temperature values (r4105[0...11]) of each group.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommend.:</td>
<td>The following connector inputs can use these connector outputs for interconnection:</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0603</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0608[0...3]</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0609[0...3]</td>
</tr>
<tr>
<td></td>
<td>- Cl: p2051</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Group 0</td>
</tr>
<tr>
<td></td>
<td>[1] = Group 1</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r4105, p4111, r4113, r4114</td>
</tr>
</tbody>
</table>

r4113[0...2] CO: TM150 group temperature actual value minimum value / TM150 grp temp min

<table>
<thead>
<tr>
<th>Description:</th>
<th>Display and connector output for the minimum value of each group for the Terminal Module 150 (TM150). This value is calculated from the actual temperature values (r4105[0...11]) of each group.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommend.:</td>
<td>The following connector inputs can use these connector outputs for interconnection:</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0603</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0608[0...3]</td>
</tr>
<tr>
<td></td>
<td>- Cl: p0609[0...3]</td>
</tr>
<tr>
<td></td>
<td>- Cl: p2051</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Group 0</td>
</tr>
<tr>
<td></td>
<td>[1] = Group 1</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r4105, p4111, r4112, r4114</td>
</tr>
</tbody>
</table>
### Description:
Display and connector output for the average value of each group for the Terminal Module 150 (TM150). This value is calculated from the actual temperature values (r4105[0...11]) of each group.

### Recommend.:
The following connector inputs can use these connector outputs for interconnection:
- CI: p0603
- CI: p0608[0...3]
- CI: p0609[0...3]
- CI: p2051

### Index:
- 

### Dependency:
Refer to: r4105, p4111, r4112, r4113

### Note:
If one group is assigned sensor type "PTC" or "bimetal NC contact", then the average value -300 °C is output.

#### Parameters

<table>
<thead>
<tr>
<th><strong>r4114[0...2]</strong></th>
<th><strong>CO: TM150 group temperature average actual value / TM150 grp temp av</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150</strong></td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32 Dynamic index: - Func. diagram: 9625</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>- Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>- Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>[°C] Max Factory setting</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r4105, p4111, r4112, r4113</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>If one group is assigned sensor type &quot;PTC&quot; or &quot;bimetal NC contact&quot;, then the average value -300 °C is output.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4117[0...2]</strong></th>
<th><strong>TM150 group sensor error effect / TM150 error effect</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 1</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16 Dynamic index: - Func. diagram: 9625</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>- Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>- Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0 Max Factory setting</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r4105, p4111, r4112, r4113</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>0: Skip sensor 1: Output value = -300 °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4118[0...11]</strong></th>
<th><strong>TM150 fault threshold/alarm threshold hysteresis / TM150 thresh hyst</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150</strong></td>
<td>Can be changed: T Calculated: - Access level: 1</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16 Dynamic index: - Func. diagram: 9626, 9627</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>- Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>- Scaling: - Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0 [K] Max Factory setting</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Temperature channel 0 [1] = Temperature channel 1</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r4105, p4111, r4112, r4113, r4114</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the hysteresis for the fault threshold/alarm threshold (p4102[0...23]) for the Terminal Module 150 (TM150).</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>0 [K] 50 [K] 5 [K]</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Temperature channel 0 [1] = Temperature channel 1</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r4105, p4111, r4112, r4113, r4114</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the hysteresis for the fault threshold/alarm threshold (p4102[0...23]) for the Terminal Module 150 (TM150).</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>0 [K] 50 [K] 5 [K]</td>
</tr>
</tbody>
</table>
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10

Dependency: Refer to: p4102, p4103, r4104, r4105

Note: The following applies for a corresponding alarm:
- Remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x] - hysteresis (p4118[x])).
The following applies for a corresponding fault:
- Remains until the temperature actual value (r4105[x]) reaches or falls below the threshold value (p4102[2x+1]) - hysteresis (p4118[x]) and the fault has been acknowledged.

**p4119[0...11]**

**TM150 activate/deactivate smoothing / TM150 smooth act**

**TM150**

Can be changed: T

Data type: Integer16

P-Group: -

Not for motor type: -

Min

Value: 0: Filter deactivated
1: Filter activated

Description: Setting to activate/deactivate the filter to smooth the temperature signal for the Terminal Module 150 (TM150).

The smoothing is realized with a 1st order lowpass filter.

The effective smoothing time constant depends on the number of channels that are simultaneously active and is displayed in r4120.

Index:

[0] = Temperature channel 0
[1] = Temperature channel 1
[2] = Temperature channel 2
[3] = Temperature channel 3
[4] = Temperature channel 4
[5] = Temperature channel 5
[6] = Temperature channel 6
[7] = Temperature channel 7
[8] = Temperature channel 8
[9] = Temperature channel 9
[10] = Temperature channel 10

Dependency: Refer to: r4120

**r4120**

**TM150 temperature filter time constant / TM150 temp_filt T**

**TM150**

Can be changed: -

Data type: Unsigned16

P-Group: -

Not for motor type: -

Min

Value: 0...11

Description: Displays the smoothing time constant for the temperature filter for Terminal Module 150 (TM150).

Dependency: Refer to: r4105, p4111, r4112, r4113

Note: The time constant lies in the range from 80 to 1000 ms and depends on the number of channels that are simultaneously active.
### List of parameters

#### p4121  
**TM150 filter rated line frequency / TM150 filt f_line**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Sets the rated line frequency for the filter to skip the line frequency for Terminal Module 150 (TM150).</td>
<td>0: 50 Hz</td>
<td>1: 60 Hz</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0458, p0600, p0601

**Note:** This parameter is effective only when p0601 = 10.

- PTC thermistor: Tripping resistance = 1650 Ohm

#### p4600[0...n]  
**Motor temperature sensor 1 sensor type / Temp_sens 1 type**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Sets the sensor type of the first temperature sensor for the motor temperature monitoring.</td>
<td>0: No sensor</td>
<td>10: PTC fault 11: PTC alarm 12: PTC alarm &amp; timer 20: KTY84, PT100, PT1000 30: Bimetallic NC contact fault 31: Bimetallic NC contact alarm 32: Bimetallic NC contact alarm &amp; timer</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0458, p0600, p0601

**Note:** This parameter is effective only when p0601 = 10.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:

- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

#### p4601[0...n]  
**Motor temperature sensor 2 sensor type / Temp_sens 2 type**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Sets the sensor type of the second temperature sensor for the motor temperature monitoring.</td>
<td>0: No sensor</td>
<td>10: PTC fault 11: PTC alarm 12: PTC alarm &amp; timer 20: KTY84, PT100, PT1000 30: Bimetallic NC contact fault 31: Bimetallic NC contact alarm 32: Bimetallic NC contact alarm &amp; timer</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0458, p0600, p0601

**Note:** This parameter is effective only when p0601 = 10.

Terminals for KTY84: X200.1, X200.2

PTC thermistor: Tripping resistance = 1650 Ohm
Parameters
List of parameters

Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

<table>
<thead>
<tr>
<th>p4602[0...n] Motor temperature sensor 3 sensor type / Temp_sens 3 type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Motor</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dynamic index: EDS, p0140</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Access level: 2</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Value:</td>
</tr>
<tr>
<td>0: No sensor</td>
</tr>
<tr>
<td>10: PTC fault</td>
</tr>
<tr>
<td>11: PTC alarm</td>
</tr>
<tr>
<td>12: PTC alarm &amp; timer</td>
</tr>
<tr>
<td>20: KTY84, PT100, PT1000</td>
</tr>
<tr>
<td>30: Bimetallic NC contact fault</td>
</tr>
<tr>
<td>31: Bimetallic NC contact alarm</td>
</tr>
<tr>
<td>32: Bimetallic NC contact alarm &amp; timer</td>
</tr>
</tbody>
</table>

Dependency: Refer to: r0458, p0600, p0601
Note: This parameter is effective only when p0601 = 10.
Terminals for PTC triplet and bimetallic: X200.3, X200.4
PTC thermistor: Tripping resistance = 1650 Ohm
Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

<table>
<thead>
<tr>
<th>p4603[0...n] Motor temperature sensor 4 sensor type / Temp_sens 4 type</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Motor</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dynamic index: EDS, p0140</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Access level: 2</td>
</tr>
<tr>
<td>Units group: -</td>
</tr>
<tr>
<td>Value:</td>
</tr>
<tr>
<td>0: No sensor</td>
</tr>
<tr>
<td>10: PTC fault</td>
</tr>
<tr>
<td>11: PTC alarm</td>
</tr>
<tr>
<td>12: PTC alarm &amp; timer</td>
</tr>
<tr>
<td>20: KTY84, PT100, PT1000</td>
</tr>
<tr>
<td>30: Bimetallic NC contact fault</td>
</tr>
<tr>
<td>31: Bimetallic NC contact alarm</td>
</tr>
<tr>
<td>32: Bimetallic NC contact alarm &amp; timer</td>
</tr>
</tbody>
</table>

Dependency: Refer to: r0458, p0600, p0601
Note: This parameter is effective only when p0601 = 10.
Terminals for PTC triplet: X200.5, X200.6
PTC thermistor: Tripping resistance = 1650 Ohm
Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual
### p4610[0...n] Motor temperature sensor 1 sensor type MDS / Temp sens1 typ MDS

| VECTOR_G | Can be changed: C2(3), U, T | Calculated: - | Access level: 2 |
| Data type: Integer16 | Dynamic index: MDS, p0130 | Func. diagram: 8016 |
| P-Group: Motor | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0 | 32 | 10 |

**Description:** Sets the sensor type of the first temperature sensor for the motor temperature monitoring.

**Value:**
- 0: No sensor
- 10: PTC fault
- 11: PTC alarm
- 12: PTC alarm & timer
- 20: KTY84, PT100, PT1000
- 30: Bimetallic NC contact fault
- 31: Bimetallic NC contact alarm
- 32: Bimetallic NC contact alarm & timer

**Dependency:** Refer to: r0458, p0600, p0601

**Note:** This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

### p4611[0...n] Motor temperature sensor 2 sensor type MDS / Temp sens2 typ MDS

| VECTOR_G | Can be changed: C2(3), U, T | Calculated: - | Access level: 2 |
| Data type: Integer16 | Dynamic index: MDS, p0130 | Func. diagram: 8016 |
| P-Group: Motor | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0 | 32 | 10 |

**Description:** Sets the sensor type of the second temperature sensor for the motor temperature monitoring.

**Value:**
- 0: No sensor
- 10: PTC fault
- 11: PTC alarm
- 12: PTC alarm & timer
- 20: KTY84, PT100, PT1000
- 30: Bimetallic NC contact fault
- 31: Bimetallic NC contact alarm
- 32: Bimetallic NC contact alarm & timer

**Dependency:** Refer to: r0458, p0600, p0601

**Note:** This parameter is effective only when p0601 = 11.

PTC thermistor: Tripping resistance = 1650 Ohm

Information on using temperature sensors is provided in the following literature:
- hardware description of the appropriate components
- SINAMICS S120 Commissioning Manual

### p4612[0...n] Motor temperature sensor 3 sensor type MDS / Temp sens3 typ MDS

| VECTOR_G | Can be changed: C2(3), U, T | Calculated: - | Access level: 2 |
| Data type: Integer16 | Dynamic index: MDS, p0130 | Func. diagram: 8016 |
| P-Group: Motor | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0 | 32 | 10 |

**Description:** Sets the sensor type of the third temperature sensor for the motor temperature monitoring.
Value:  
0: No sensor  
10: PTC fault  
11: PTC alarm  
12: PTC alarm & timer  
20: KTY84, PT100, PT1000  
30: Bimetallic NC contact fault  
31: Bimetallic NC contact alarm  
32: Bimetallic NC contact alarm & timer  

Dependency:  Refer to: r0458, p0600, p0601  
Note:  This parameter is effective only when p0601 = 11.  
PTC thermistor: Tripping resistance = 1650 Ohm  
Information on using temperature sensors is provided in the following literature:  
- hardware description of the appropriate components  
- SINAMICS S120 Commissioning Manual

**p4613[0...n]**  
**Motor temperature sensor 4 sensor type MDS / Temp sens4 typ MDS**

| Description | Sets the sensor type of the fourth temperature sensor for the motor temperature monitoring.  
| Value | 0: No sensor  
10: PTC fault  
11: PTC alarm  
12: PTC alarm & timer  
20: KTY84, PT100, PT1000  
30: Bimetallic NC contact fault  
31: Bimetallic NC contact alarm  
32: Bimetallic NC contact alarm & timer  
| Dependency | Refer to: r0458, p0600, p0601  
Note:  This parameter is effective only when p0601 = 11.  
PTC thermistor: Tripping resistance = 1650 Ohm  
Information on using temperature sensors is provided in the following literature:  
- hardware description of the appropriate components  
- SINAMICS S120 Commissioning Manual

**r4620[0...3]**  
**Motor temperature measured / Mot_temp meas**

| Description | Displays the actual temperature in the motor measured through temperature channels 1 ... 4.  
| Index | [0] = Temperature channel 1  
[1] = Temperature channel 2  
[2] = Temperature channel 3  
[3] = Temperature channel 4  
| Note:  For a value not equal to -200.0 °C, the following applies:  
- this temperature display is valid.  
- a KTY sensor is connected.  
For a value equal to -200.0 °C, the following applies:  
- this temperature display is not valid (temperature sensor error).  
- A PTC sensor or bimetallic NC contact is connected.  

- the temperature sensor evaluation is de-activated (p0600 = 0 or p0601 = 0).
- the sensor channel is de-activated (p460x = 0 or p461x = 0).

### r4640[0...95] Encoder diagnostics state machine / Enc diag stat_ma

**ENC, VECTOR_G**

- **Can be changed:** Not for motor type: 
  - Calculated: -
  - Access level: 4

- **Data type:** Unsigned32
- **P-Group:** Encoder
- **Not for motor type:**
  - Scaling: -
  - Expert list: 1

**Min**
- **Max**

**Description:** Displays the encoder diagnostics for the PROFIdrive interface.

### p4650 Encoder functional reserve component number / Enc fct_res num

**CU_G130_DP,**
**CU_G130_PN,**
**CU_G150_DP,**
**CU_G150_PN**

- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** Displays, signals
- **Not for motor type:**
  - Min 0
  - Max 399

**Description:** Sets the component number (p0141) of the encoder whose functional reserve is to be displayed (r4651).

**Dependency:** Refer to: r4651

### r4651[0...3] Encoder functional reserve / Enc fct_reserve

**CU_G130_DP,**
**CU_G130_PN,**
**CU_G150_DP,**
**CU_G150_PN**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Displays, signals
- **Not for motor type:**
  - Min - [%]
  - Max - [%]

**Description:** Displays the functional reserve of the encoder selected via p4650.  
0 ... 25 %: The function limit has been reached. A service is recommended.  
26 ... 100 %: The encoder is working in the specified range.

**Index:**
- [0] = Incremental
- [1] = Reserved
- [2] = Abs track
- [3] = Code conn

**Dependency:** Refer to: p4650

**Note:** Value = 999 means:  
- the component specified in p4650 is not connected  
- the encoder does not support the display of the functional reserve

### p4652 XIST1_ERW reset mode / XIST1_ERW res mode

**ENC**

- **Can be changed:** C1(3)
- **Data type:** Integer16
- **P-Group:**
  - Scaling: -
  - Expert list: 1

**Min**
- **Max**

**Description:** Sets the mode to reset the actual value in XIST_ERW (CO: r4653).

**Value:**
- 0: Inactive
- 1: Reset with zero mark
**Parameters**

**List of parameters**

2: Reset with BICO  
3: Reset with selected zero mark  

**Dependency:**
Refer to: r4653, r4654, p4655  

**Note:**
If value = 1:  
The value in XIST1_ERW is reset when passing every zero mark.  
If value = 2:  
The value in XIST1_ERW is reset with a 0/1 edge via binector input p4655.  
If value = 3:  
The value in XIST1_ERW is reset after a 0/1 edge via binector input p4655 when passing the next zero mark.

---

**p4652[0...2]**  
**XIST1_ERW reset mode / XIST1_ERW res mode**

Can be changed: C1(3)  
Data type: Integer16  
P-Group: -  
Not for motor type: -  
Min  
Max  
Value:  
0: Inactive  
1: Reset with zero mark  
2: Reset with BICO  
3: Reset with selected zero mark  
Index:  
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3  

Description:  
Sets the mode to reset the actual value in XIST_ERW (CO: r4653).

Dependency:  
Refer to: r4653, r4654, p4655  

**Note:**
If value = 1:  
The value in XIST1_ERW is reset when passing every zero mark.  
If value = 2:  
The value in XIST1_ERW is reset with a 0/1 edge via binector input p4655.  
If value = 3:  
The value in XIST1_ERW is reset after a 0/1 edge via binector input p4655 when passing the next zero mark.

---

**r4653**  
**CO: XIST1_ERW actual value / XIST1_ERW actval**

Can be changed: -  
Data type: Unsigned32  
P-Group: Encoder  
Not for motor type: -  
Min  
Max  
Value:  
Access level: 3  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting:

Description:  
Display and connector output for the actual value XIST1_ERW.

Dependency:  
Refer to: r4652, r4654, p4655  

---

**r4653[0...2]**  
**CO: XIST1_ERW actual value / XIST1_ERW actval**

Can be changed: -  
Data type: Unsigned32  
P-Group: Encoder  
Not for motor type: -  
Min  
Value:  
Access level: 3  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting:

Description:  
Display and connector output for the actual value XIST1_ERW.

Index:  
[0] = Encoder 1  
[1] = Encoder 2  
[2] = Encoder 3
Dependency: Refer to: p4652, r4654, p4655

--r4654.0--
**CO/BO: XIST1_ERW status / XIST1_ERW stat**

ENC
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: 4750
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting

Description: Display and binector output to reset XIST1_ERW.

Bit field:
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>XIST1_ERW reset</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p4652, r4653, p4655
Note: The reset of XIST1_ERW is initiated via binector input p4655.
Binector output r4654 is reset with a 0 signal from binector input p4655.

---r4654.0...16---
**CO/BO: XIST1_ERW status / XIST1_ERW stat**

VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: 4750
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting

Description: Display and binector output to reset XIST1_ERW.

Bit field:
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Encoder 1 XIST1_ERW reset</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Encoder 2 XIST1_ERW reset</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Encoder 3 XIST1_ERW reset</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p4652, r4653, p4655
Note: The reset of XIST1_ERW is initiated via binector input p4655.
Binector output r4654 is reset with a 0 signal from binector input p4655.

---p4655---
**BI: XIST1_ERW reset signal source / XIST1_ERW resS_src**

ENC
Can be changed: T Calculated: - Access level: 3
Data type: Unsigned32 / Binary Dynamic index: - Func. diagram: 4750
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting 0

Description: Sets the signal source to reset XIST1_ERW (CO: r4653).

Dependency: Refer to: p4652, r4653, r4654
Note: The reset of XIST1_ERW depends on the selected mode (p4652).

---p4655[0...2]---
**BI: XIST1_ERW reset signal source / XIST1_ERW resS_src**

VECTOR_G
Can be changed: T Calculated: - Access level: 3
Data type: Unsigned32 / Binary Dynamic index: - Func. diagram: 4750
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting 0

Description: Sets the signal source to reset XIST1_ERW (CO: r4653).
p4660 Sensor Module filter bandwidth / SM Filt_bandw

ENC Can be changed: C2(4) Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0.00 [kHz] 20000.00 [kHz] 0.00 [kHz]

Description: Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).
The value set on the Sensor Module is displayed in r4661.
The Sensor Module hardware only supports the following values:
- 0: The Sensor Module's default is used.
- 50 kHz
- 170 kHz
- 500 kHz
- Unlimited: Only the bandwidth of the operational amplifier is effective.

Dependency: Refer to: r4661
Note: A value of zero is displayed if an encoder is not present.

p4660[0...2] Sensor Module filter bandwidth / SM Filt_bandw

VECTOR_G Can be changed: C2(4) Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0.00 [kHz] 20000.00 [kHz] 0.00 [kHz]

Description: Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).
The value set on the Sensor Module is displayed in r4661.
The Sensor Module hardware only supports the following values:
- 0: The Sensor Module's default is used.
- 50 kHz
- 170 kHz
- 500 kHz
- Unlimited: Only the bandwidth of the operational amplifier is effective.

Index: [0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3
Dependency: Refer to: r4661
Note: A value of zero is displayed if an encoder is not present.

r4661 Sensor Module filter bandwidth display / SM Filt_bandw disp

ENC Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: -
P-Group: Encoder Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- [kHz] - [kHz] - [kHz]

Description: Display of the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).
### List of parameters

The bandwidth of the filter is set using p4660.

**Dependency:**
Refer to: p4660

**Note:**
A value of zero is displayed if an encoder is not present.

---

#### r4661[0...2]
**Sensor Module filter bandwidth display / SM Filt_bandw disp**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>- [kHz]</td>
</tr>
</tbody>
</table>

**Description:**
Display of the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).

The bandwidth of the filter is set using p4660.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Dependency:**
Refer to: p4660

**Note:**
A value of zero is displayed if an encoder is not present.

---

#### p4662[0...n]
**Encoder characteristic type / Enc char_type**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the characteristic type.

For non-linear sensors, the interrelationship between the signal voltage and the position can be defined using a third degree polynomial.

**Value:**
- 0: Characteristic inactive
- 1: Characteristic polynomial third degree

**Dependency:**
Refer to: p4663, p4664, p4665, p4666

**Note:**
If value = 1:
A third degree polynomial is defined as follows:
\[ F(x) = K3 \cdot x^3 + K2 \cdot x^2 + K1 \cdot x + K0 \]
Coefficients K0 ... K3 should be defined and entered into p4663 ... p4666.
The sensor range is emulated to \( x = -0.5 \) ... +0.5.

---

#### p4663[0...n]
**Encoder characteristic K0 / Enc char K0**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Setting for coefficient K0 to calculate the characteristic (p4662).

**Dependency:**
Refer to: p4662, p4664, p4665, p4666
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4664[0...n]</td>
<td>Encoder characteristic K1 / Enc char K1</td>
<td>Setting for coefficient K1 to calculate the characteristic (p4662).</td>
</tr>
<tr>
<td>p4665[0...n]</td>
<td>Encoder characteristic K2 / Enc char K2</td>
<td>Setting for coefficient K2 to calculate the characteristic (p4662).</td>
</tr>
<tr>
<td>p4666[0...n]</td>
<td>Encoder characteristic K3 / Enc char K3</td>
<td>Setting for coefficient K3 to calculate the characteristic (p4662).</td>
</tr>
<tr>
<td>p4670[0...n]</td>
<td>Analog sensor configuration / Ana_sens config</td>
<td>Sets the configuration for evaluation on the analog sensor.</td>
</tr>
</tbody>
</table>

#### Notice:
- Re bit 06: Setting the bit sets the velocity actual value (r0061) permanently to 0.
- Re bit 13: Setting the bit sets the commutation angle permanently to the commutation angle offset (p0431).
### Note:

Re bit 09:
A setting of bit = 0 will trigger a fault for the relevant channel if the actual value is invalid.
A setting of bit = 1 will trigger an alarm for the relevant channel if the actual value is invalid.
Re bit 10, 11:
If both channels are activated, the actual value is generated from the mean value of both channels. If a channel fails (actual value invalid), it is not included when the mean value is generated.
Re bit 14:
The bit is only evaluated for encoder 1. No effect for encoder 2 and encoder 3.

### p4671 [0...n]
**Analog sensor input / Ana_sens inp**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>C2(4)</th>
<th>Data type:</th>
<th>Integer16</th>
<th>Dynamic index: EDS, p0140</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>0</td>
<td>Factory setting</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the input circuit for the analog sensor.

**Value:**
- 0: Differential
- 1: Single-ended A, B
- 2: Single-ended A*, B*
- 3: Single-ended A, B sensitive

**Note:**
p4671 = 0: The two signals on a track are evaluated differentially.
p4671 = 1: Only the non-inverted signal on a track is evaluated.
p4671 = 2: Only the inverted signal on a track is evaluated.
p4671 = 3: Only the non-inverted signal on a track (high resolution) is evaluated.

### p4672 [0...n]
**Analog sensor channel A voltage at actual value zero / Ana_sens A U at 0**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
<th>Dynamic index: EDS, p0140</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>MAX</td>
<td>0</td>
<td>Factory setting</td>
<td>10.0000 [V]</td>
<td>0.0000 [V]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the voltage when the connected sensor is at actual value zero.
At this voltage channel A supplies an actual value of zero.

### p4673 [0...n]
**Analog sensor channel A voltage per encoder period / Ana_sens A U/per**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Data type:</th>
<th>FloatingPoint32</th>
<th>Dynamic index: EDS, p0140</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>MAX</td>
<td>-10.0000 [V]</td>
<td>10.0000 [V]</td>
<td>6.0000 [V]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the output voltage range to be mapped for the connected analog sensor.
The voltage range is determined by the following parameters:
- p4672 (voltage at actual value 0)
- p4673 (voltage per encoder period)

**Note:**
The minimum actual value which can be mapped is equal to p4672 - p4673/2.
The maximum actual value which can be mapped is equal to p4672 + p4673/2.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>p4674[0...n]</th>
<th>Analog sensor channel B voltage at actual value zero / Ana_sens B U at 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: EDS, p0140 Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-10.0000 [V]</td>
<td>10.0000 [V] 0.0000 [V]</td>
</tr>
</tbody>
</table>

**Description:** Sets the voltage when the connected sensor is at actual value zero. At this voltage channel B supplies an actual value of zero.

<table>
<thead>
<tr>
<th>p4675[0...n]</th>
<th>Analog sensor channel B voltage per encoder period / Ana_sens B U/per</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: EDS, p0140 Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-10.0000 [V]</td>
<td>10.0000 [V] 6.0000 [V]</td>
</tr>
</tbody>
</table>

**Description:** Sets the output voltage range to be mapped for the connected analog sensor. The voltage range is determined by the following parameters:

- p4674 (voltage at actual value 0)
- p4675 (voltage per encoder period)

**Note:**
The minimum actual value which can be mapped is equal to p4674 - p4675/2. The maximum actual value which can be mapped is equal to p4674 + p4675/2.

<table>
<thead>
<tr>
<th>p4676[0...n]</th>
<th>Analog sensor range limit threshold / Ana_sens lim thr</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: EDS, p0140 Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>100.0 [%] 100.0 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the threshold for limit monitoring of the absolute actual value on the analog sensor. If this threshold is overshot by the actual value of a channel, a corresponding fault/alarm (p4670.9) is output.

**Dependency:** Refer to: p4673, p4675

<table>
<thead>
<tr>
<th>p4677[0...n]</th>
<th>Analog sensor LVDT configuration / Ana_sens LVDT conf</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Can be changed: C2(4) Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: EDS, p0140 Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>- 0000 bin</td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration for LVDT mode on the analog sensor.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>LVDT ON</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Track B excitation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fixed value amplitude</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fixed value amplitude and phase</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Setting</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4678[0...n]</td>
<td>Analog sensor LVDT ratio / An_sens LVDT ratio</td>
<td>Can be changed: C2(4)</td>
<td>0.00 [%] 200.00 [%] 50.00 [%]</td>
</tr>
<tr>
<td>p4679[0...n]</td>
<td>Analog sensor LVDT phase / An_sens LVDT ph</td>
<td>Can be changed: C2(4), T</td>
<td>-360.00 [°] 360.00 [°] 0.00 [°]</td>
</tr>
<tr>
<td>p4680[0...n]</td>
<td>Zero mark monitoring tolerance permissible / ZM_monit tol perm</td>
<td>Can be changed: C2(4)</td>
<td>0 1000 4</td>
</tr>
<tr>
<td>p4681[0...n]</td>
<td>Zero mark monitoring, tolerance window limit 1 positive / ZM tol lim 1 pos</td>
<td>Can be changed: C2(4)</td>
<td>0 1000 2</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the ratio for the LVDT sensor.
- Sets the phase for the LVDT sensor.
- Sets the permissible tolerance in encoder pulses for the zero mark distance in the context of zero mark monitoring.
- Causes fault F3x100 to appear less frequently.
- The parameter is activated using p0430.21 = 1 (zero mark tolerance).
- Sets the positive tolerance window in encoder pulses for limit 1 for the zero mark monitoring.

**Dependency:**
- Refer to: p0430
- Refer to: F31100
- Refer to: p4688
- Refer to: F31131

**Note:**
- The parameter is activated using p0430.21 = 1 (zero mark tolerance).
- The positive limit describes additional pulses due to EMC.
**p4682[0...n]**  
Zero mark monitoring, tolerance window limit 1 negative / ZM tol lim 1 neg

**Description:**
Sets the negative tolerance window in encoder pulses for limit 1 for the zero mark monitoring. If the deviation is less than this limit, the PPR is not corrected. If it is higher than this limit, fault F3x131 is triggered. If fault F3x131 is re-parameterized to alarm (A) or no message (N), the encoder pulses which have not been corrected are added to the accumulator (p4688). The accumulator can be de-activated using p0437.7.

**Dependency:**
Refer to: p0437, p4681, p4688  
Refer to: F31131

**Note:**
This monitoring is activated by setting p0437.2 = 1 (position actual value correction). For a set value = -1001, the negated value of p4681 is effective. The negative limit describes the pulses lost due to a covered glass panel in the incremental encoder.

**p4683[0...n]**  
Zero mark monitoring tolerance window alarm threshold positive / ZM tol A_thr pos

**Description:**
Sets the positive tolerance window in encoder pulses for limit 2 for the zero mark monitoring. If the zero mark deviation is higher than the tolerance set in p4681 and p4682 and fault F3x131 is re-parameterized to alarm (A) or no message (N), the accumulator p4688 is compared with this parameter and, if applicable, alarm A3x422 is output for 5 seconds.

**Dependency:**
Refer to: p0437, p4681, p4682, p4688  
Refer to: F31131, A31422

**Note:**
Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).

**p4684[0...n]**  
Zero mark monitoring tolerance window alarm threshold negative / ZM tol A_thr neg

**Description:**
Sets the negative tolerance window in encoder pulses for limit 2 for the zero mark monitoring. If the zero mark deviation is higher than the tolerance set in p4681 and p4682 and fault F3x131 is re-parameterized to alarm (A) or no message (N), the accumulator p4688 is compared with this parameter and, if applicable, alarm A3x422 is output for 5 seconds.

**Dependency:**
Refer to: p0437, p4683, p4688  
Refer to: F31131, A31422

**Note:**
Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction). For a set value = -100001, the negated value of p4683 is effective.
### p4685[0...n]
#### Speed actual value mean value generation / n_act mean val

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting:</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>20</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the number of current controller clock cycles for mean value generation of the speed actual value.

**Note:**
- Value = 0, 1: No mean value generation.
- Higher values also mean higher dead times for the speed actual value.

### p4686[0...n]
#### Zero mark minimum length / ZM min length

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
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<tr>
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<td>Dynamic index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting:</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>10</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the minimum length for the zero mark.

**Dependency:** Refer to: p0425, p0437

**Note:** The value for the minimum length of the zero mark must be set less than p0425. The parameter is activated using p0437.1 = 1 (zero mark edge detection).

### p4688
#### CO: Zero mark monitoring, differential pulse count / ZM diff_pulse qty

<table>
<thead>
<tr>
<th>ENC</th>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting:</td>
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</tr>
<tr>
<td>-2147483648</td>
<td>2147483647</td>
<td>0</td>
<td></td>
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</tbody>
</table>

**Description:** Displays the number of differential pulses for the zero mark monitoring that have accumulated.

**Dependency:** Refer to: p4681, p4682, p4683, p4684

**Note:** The display can only be reset to zero.

### p4688[0...2]
#### CO: Zero mark monitoring, differential pulse count / ZM diff_pulse qty

<table>
<thead>
<tr>
<th>VECTOR_G</th>
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<td>Not for motor type:</td>
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<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td>Min</td>
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<tr>
<td>-2147483648</td>
<td>2147483647</td>
<td>0</td>
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</tr>
</tbody>
</table>

**Description:** Displays the number of differential pulses for the zero mark monitoring that have accumulated.

**Dependency:** Refer to: p4681, p4682, p4683, p4684

**Note:** The display can only be reset to zero.
**Parameters**

**List of parameters**

---

**r4689**

**CO: Squarewave encoder, diagnostics / Sq-wave enc diag**

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<td>Encoder</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td></td>
</tr>
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</table>

**Description:**
Displays the encoder status according to PROFIdrive for a squarewave encoder.

**Dependency:**
Refer to: A31422

**Note:**
After alarm A3x422 is output, this parameter is set for 100 ms.

---

**r4689[0...2]**

**CO: Squarewave encoder, diagnostics / Sq-wave enc diag**

<table>
<thead>
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<td>Encoder</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
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<td>Scaling:</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</table>

**Description:**
Displays the encoder status according to PROFIdrive for a squarewave encoder.

**Index:**
[0] = Encoder 1
[1] = Encoder 2
[2] = Encoder 3

**Dependency:**
Refer to: A31422

**Note:**
After alarm A3x422 is output, this parameter is set for 100 ms.

---

**p4690**

**SMI spare part component number / SMI comp_no**

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<td>Displays, signals</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the component number for the SMI/DQI for which motor and/or encoder data should be saved, deleted or downloaded.

**Dependency:**
Refer to: p4691, p4692, p4693

**Note:**
DQI: DRIVE-CLiQ Sensor Integrated
SMI: SINAMICS Sensor Module Integrated

---

**p4691**

**SMI spare part save/download data / Save/DL SMI data**

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
<th>Can be changed: T</th>
<th>Calculated:</th>
<th>-</th>
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<tbody>
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<td>-</td>
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<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
<td>Units group:</td>
<td>-</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting for the saving/downloading/deletion of motor and/or encoder data for the component specified in p4690 (SMI/DQI).

A backup of this data can be saved to non-volatile memory. The backup procedure is performed automatically as part of the function for saving to non-volatile memory (p0977 = 1 or "Copy RAM to ROM"). If a part is replaced, the saved data can be reloaded.
Parameters

List of parameters

Procedure:
p4690 = set component number
p4691 = 1, 2, 30: Set the required procedure (save/download/delete).
p4691 = 9, 10, 36: Feedback signal on successful completion of the procedure.
p4691 = 11… 22, 37, 38: Error values if the procedure could not be executed successfully.

Value:
0: Inactive
1: Save SMI data
2: Download SMI data
9: SMI data downloaded and POWER ON required for component
10: SMI data backup complete
11: SMI data backup for selected component not found
12: Selected component not available or not connected
13: Insufficient memory space for backup
14: Format of saved data is incompatible
15: Transfer fault during data download
16: Transfer fault during data backup
17: Data backup does not match parameterized encoder/motor
18: Data backup directory not permissible
19: Component already contains data
20: Component does not contain any data
21: Component is not an SMI or a DQI
22: SMI data cannot be downloaded for component
30: Delete SMI data
35: Confirmation of SMI data delete required
36: SMI data deleted and POWER ON required for component
37: Access level not sufficient for delete
38: Delete SMI data not permitted for component
39: SMI data for component cannot be deleted

Dependency:
Refer to: p4690, p4692, p4693

Notice:
Once SMI/DQI data has been deleted or downloaded successfully, the component has to be powered up.

Note:
SMI: SINAMICS Sensor Module Integrated
DQI: DRIVE-CLiQ Sensor Integrated

Help for error value = 11:
- Save the data for the original SMI on the memory card.
- Use an SMI with a suitable hardware version.

Help for error value = 12:
- Set the correct component number or connect the component.

Help for error value = 13:
- Use a memory card with more memory space.

Help for error value = 14:
- Create a data backup on the memory card corresponding to the SMI type.

Help for error value = 15:
- Check the DRIVE-CLiQ wiring for the component.

Help for error value = 16:
- Check the DRIVE-CLiQ wiring for the component.

Help for error value = 17:
- Save the data for the original SMI on the memory card.

Help for error value = 18:
- Set parameter p4693 to an appropriate value.

Help for error value = 19:
- Perform an SMI delete or use a blank SMI.

Help for error value = 20:
- Use an SMI that is not blank.

Help for error value = 21:
- Set the correct component number (p4690).

Note for error value = 22:
- Data cannot be downloaded for component.
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>p4692</th>
<th>SMI spare part save data of all SMIs / Save SMI data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong>&lt;br&gt;<strong>CU_G130_PN,</strong>&lt;br&gt;<strong>CU_G150_DP,</strong>&lt;br&gt;<strong>CU_G150_PN</strong></td>
<td>Can be changed: T&lt;br&gt;Data type: Integer16&lt;br&gt;P-Group: Displays, signals&lt;br&gt;Not for motor type: -&lt;br&gt;Min: 0&lt;br&gt;Max: 29</td>
</tr>
<tr>
<td><strong>CU_G130_DP,</strong>&lt;br&gt;<strong>CU_G130_PN,</strong>&lt;br&gt;<strong>CU_G150_DP,</strong>&lt;br&gt;<strong>CU_G150_PN</strong></td>
<td>Calculated: -&lt;br&gt;Dynamic index: -&lt;br&gt;Units group: -&lt;br&gt;Scaling: -&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: 0</td>
</tr>
<tr>
<td><strong>Access level:</strong> 1</td>
<td><strong>Value:</strong> 0: Inactive&lt;br&gt;1: Save data of all SMIs and DQIs&lt;br&gt;10: Save all data successful&lt;br&gt;13: Insufficient memory space for backup&lt;br&gt;16: Transfer fault during data backup&lt;br&gt;20: Component does not contain any data&lt;br&gt;29: Not all components from target topology saved</td>
</tr>
<tr>
<td><strong>Note:</strong> SMI: SINAMICS Sensor Module Integrated&lt;br&gt;p4692 = 10: Automatic on successful completion of backup procedure.&lt;br&gt;p4692 = 13, 16, 20, 29: Error values if the procedure could not be executed successfully.&lt;br&gt;The procedure must be repeated if the data save operation was interrupted (e.g. if the power supply voltage failed).&lt;br&gt;Help for error value = 13:&lt;br&gt;- Use a memory card with more memory space.&lt;br&gt;Help for error value = 16:&lt;br&gt;- check the DRIVE-CLiQ connection.&lt;br&gt;Help for error value = 20:&lt;br&gt;- Use an SMI that is not blank.&lt;br&gt;Help for error value = 29:&lt;br&gt;- Check and correct the target and actual topologies for the SMIs.&lt;br&gt;- Repeat the save procedure.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p4693[0...1]</th>
<th>SMI spare part data backup directory / SMI dat_bkup dir</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong>&lt;br&gt;<strong>CU_G130_PN,</strong>&lt;br&gt;<strong>CU_G150_DP,</strong>&lt;br&gt;<strong>CU_G150_PN</strong></td>
<td>Can be changed: T&lt;br&gt;Data type: Unsigned16&lt;br&gt;P-Group: Displays, signals&lt;br&gt;Not for motor type: -&lt;br&gt;Min: 0&lt;br&gt;Max: 399</td>
</tr>
<tr>
<td><strong>CU_G130_DP,</strong>&lt;br&gt;<strong>CU_G130_PN,</strong>&lt;br&gt;<strong>CU_G150_DP,</strong>&lt;br&gt;<strong>CU_G150_PN</strong></td>
<td>Calculated: -&lt;br&gt;Dynamic index: -&lt;br&gt;Units group: -&lt;br&gt;Scaling: -&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting: 0</td>
</tr>
<tr>
<td><strong>Access level:</strong> 3</td>
<td><strong>Value:</strong> 0: Inactive&lt;br&gt;1: Save data of all SMIs and DQIs&lt;br&gt;10: Save all data successful&lt;br&gt;13: Insufficient memory space for backup&lt;br&gt;16: Transfer fault during data backup&lt;br&gt;20: Component does not contain any data&lt;br&gt;29: Not all components from target topology saved</td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the directory for downloading and saving data.&lt;br&gt;Example:&lt;br&gt;The SMI has the component number 5 and the SMI data (motor/encoder data) is to be stored in subdirectory C205.&lt;br&gt;--&gt; p4690 = 5, p4693[0] = 205, p4691 = 1</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong>&lt;br&gt;[0] = Subdirectory selection&lt;br&gt;[1] = Reserved</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p4691, r4694</td>
<td></td>
</tr>
</tbody>
</table>
**Notice:**
If p4693[0] is not equal to 0 and p4693[0] is not equal to p4690, the following applies:
- Only a number >= 200 may be selected for the subdirectory when saving.
- In the case of downloads, a selection for the subdirectory may only be made for an SMI/DQI with a component number >= 200 (preliminary component number) (p4690 >= 200).

**Note:**
DQI: DRIVE-CLiQ Sensor Integrated
SMI: SINAMICS Sensor Module Integrated
Re index 0:
This index is used to select the subdirectory for saving and downloading data. The motor order number (MLFB) of the corresponding data backup is displayed in r4694.
For p4693[0] = 0, the following applies:
The directory is determined by the setting of p4690.

<table>
<thead>
<tr>
<th>r4694[0...19]</th>
<th>SMI spare part data backup motor order number / SMI dat_bkup MLFB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
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<tr>
<td>CU_G130_DP,</td>
<td>Dynamic index: - Func. diagram: -</td>
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<tr>
<td>CU_G130_PN,</td>
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<td>CU_G150_PN,</td>
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<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the motor order number (MLFB) of the data backup selected with p4693.

**Dependency:**
Refer to: p4691, p4692

**Caution:**
If the selected subdirectory contains a number of data sets, "More Datasets" is displayed in r4694[0...19].
If there is no SMI data (motor/encoder data) in the selected subdirectory or if the selected subdirectory does not exist, the following applies:
- The number of the next subdirectory located is displayed.
- This subdirectory is not checked for valid SMI data.
- If another subdirectory cannot be located, nothing is displayed in r4694[0...19].

**Note:**
SMI: SINAMICS Sensor Module Integrated

<table>
<thead>
<tr>
<th>p4700[0...1]</th>
<th>Trace control / Trace control</th>
</tr>
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<tbody>
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<tr>
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<td>Units group: - Unit selection: -</td>
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<td>Scaling: - Expert list: 0</td>
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<tr>
<td>CU_G150_PN,</td>
<td>Factory setting</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
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<td>Not for motor type: -</td>
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<td>Min</td>
<td>Max</td>
</tr>
<tr>
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</tbody>
</table>

**Description:**
Setting to control the trace function.

**Value:**
0: Stop trace
1: Start trace

**Index:**
[0] = Trace 0
[1] = Trace 1

<table>
<thead>
<tr>
<th>p4701</th>
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<tbody>
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<td>Trace and function generator</td>
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<tr>
<td>Not for motor type: -</td>
<td></td>
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<tr>
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<td>3</td>
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</table>

**Description:**
Setting to control the measurement function.

**Value:**
0: Stop measuring function
1: Start measuring function
2: Measuring function, check parameterization
3: Start measuring function without enable signals

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Parameters

#### List of parameters

**r4705[0...1] Trace status / Trace status**

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<tr>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Expert list</th>
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**r4706 Measuring function, status / Meas fct status**

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<td>Measuring function, trace successfully completed</td>
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**p4707 Measurement function configuration / Meas fct config**

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<thead>
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<td></td>
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<td>Free meas fct</td>
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</table>

For value = 0:

The system injection point selected to inject the function generator signal is used.

For value = 1:

No system injection point is used.

When using the measuring function in the STARTER commissioning software, the following applies:

A change to a value only becomes effective after first closing and opening the measuring function screen form.

For value = 0:

The master control must be fetched.

There are two fixed and two freely selectable signals for recording.

For value = 1:

Master control does not have to be fetched.

There are four freely selectable signals for recording.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Value</th>
<th>Factory setting</th>
<th>Access level</th>
<th>Type</th>
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<td>Unit selection: -</td>
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</table>
### Parameters

**List of parameters**

1. **Dependency:**
   - Only effective when p4710 does not equal 1.

2. **Note:**
   - It only makes sense to trace the PINs using the commissioning software.
   - For index 2(4) and 3(5) equal to zero, index 0(1) can only be written and vice versa.
   - Re index 0 ... 1:
     - The triggering PIN for trace 0 or 1 is entered as parameter in the BICO format.
   - Re index 2 ... 3:
     - Here, the trigger signal for trace 0 or 1 is entered as parameter in the BICO format.
     - For trace with a physical address (p4789), the data type of the trigger signal is set here.
   - Re index 4 ... 5:
     - The triggering PIN for trace 1 is entered here.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
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<tbody>
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<td>p4712[0...1]</td>
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<td>p4714[0...1]</td>
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### List of parameters

<table>
<thead>
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<th>Parameter</th>
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<th>Data type</th>
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<td></td>
<td>Sets the number of averaging operations for the measuring function.</td>
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<td>Displays the trigger index in the trace buffer. The trigger event occurred at this point.</td>
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### Parameters

#### List of parameters

| Dependency: | Only valid when p4705 = 4. |

<table>
<thead>
<tr>
<th>p4720[0...1]</th>
<th>Trace recording cycle / Trace record_cyc</th>
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<tr>
<td><strong>Can be changed:</strong> U, T</td>
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<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 0</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>0.000 [ms]</td>
<td>600000.000 [ms]</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>Factory setting</td>
</tr>
<tr>
<td>[0] = Trace 0</td>
<td>1.000 [ms]</td>
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<td>[1] = Trace 1</td>
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**Description:**
Sets the recording cycle for the trace.

<table>
<thead>
<tr>
<th>p4721[0...1]</th>
<th>Trace recording time / Trace record_time</th>
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<td>Dynamic index: - Func. diagram: -</td>
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<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
<td>Units group: - Unit selection: -</td>
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<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 0</td>
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<tr>
<td><strong>Min</strong></td>
<td>Max</td>
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<tr>
<td>0.000 [ms]</td>
<td>3600000.000 [ms]</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>Factory setting</td>
</tr>
<tr>
<td>[0] = Trace 0</td>
<td>1000.000 [ms]</td>
</tr>
<tr>
<td>[1] = Trace 1</td>
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</table>

**Description:**
Sets the recording time for the trace.

<table>
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<tr>
<th>p4722[0...1]</th>
<th>Trace trigger delay / Trace trig_delay</th>
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<tr>
<td><strong>Can be changed:</strong> U, T</td>
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<td>Dynamic index: - Func. diagram: -</td>
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<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
<td>Units group: - Unit selection: -</td>
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<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 0</td>
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<tr>
<td><strong>Min</strong></td>
<td>Max</td>
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<tr>
<td>-3600000.000 [ms]</td>
<td>3600000.000 [ms]</td>
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<tr>
<td><strong>Index:</strong></td>
<td>Factory setting</td>
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<tr>
<td>[0] = Trace 0</td>
<td>0.000 [ms]</td>
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<tr>
<td>[1] = Trace 1</td>
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</tbody>
</table>

**Description:**
Sets the trigger delay for the trace.

- Trigger delay < 0:
  - Pretrigger: Tracing (recording) starts the selected time before the trigger event actually occurs.

- Trigger delay > 0:
  - Post trigger: Tracing does not start until the set time after the trigger event.

<table>
<thead>
<tr>
<th>p4723[0...1]</th>
<th>Trace time slice cycle / Trace cycle</th>
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<tbody>
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<td>Units group: - Unit selection: -</td>
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<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: - Expert list: 0</td>
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<tr>
<td><strong>Min</strong></td>
<td>Max</td>
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<tr>
<td>0.03125 [ms]</td>
<td>4.000000 [ms]</td>
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<td>[0] = Trace 0</td>
<td>0.12500 [ms]</td>
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<td>[1] = Trace 1</td>
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**Description:**
Sets the time slice cycle in which the trace is called.
### List of parameters

#### p4724[0...1] Trace average in the time range / Trace average

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<td>Not for motor type: -</td>
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<td>Description: Sets the averaging in the time range for the trace.</td>
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#### r4725[0...1] Trace, data type 1 traced / Trace rec type 1

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<td>Not for motor type: -</td>
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#### r4726[0...1] Trace, data type 2 traced / Trace rec type 2

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<td>Not for motor type: -</td>
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#### r4727[0...1] Trace, data type 3 traced / Trace rec type 3

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#### r4728[0...1] Trace, data type 4 traced / Trace rec type 4

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<th>Expert list</th>
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<th>Factory setting</th>
<th>Factory setting</th>
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<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
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<tr>
<td>Description: Displays the recorded data type 4 for the trace.</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### Parameters

**Index:**
- [0] = Trace 0
- [1] = Trace 1

#### r4729[0...1] Trace number of recorded values / Trace rec values

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

<table>
<thead>
<tr>
<th>Component</th>
<th>Can be changed:</th>
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<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 0

**Description:** Displays the number of traced values for each signal.

**Index:**
- [0] = Trace 0  
- [1] = Trace 1

**Dependency:** Only valid when p4705 = 4.

#### p4730[0...5] Trace record signal 0 / Trace record sig 0

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

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<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 0

**Description:** Selects the first signal to be traced.

**Index:**
- [0] = Trace 0 parameter in BICO format  
- [1] = Trace 1 parameter in BICO format  
- [2] = Trace 0 PINx with DO Id and chart Id  
- [3] = Trace 0 PINx with block Id and PIN Id  
- [4] = Trace 1 PINy with DO Id and chart Id  
- [5] = Trace 1 PINy with block Id and PIN Id

#### p4731[0...5] Trace record signal 1 / Trace record sig 1

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

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<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 0

**Description:** Selects the second signal to be traced.

**Index:**
- [0] = Trace 0 parameter in BICO format  
- [1] = Trace 1 parameter in BICO format  
- [2] = Trace 0 PINx with DO Id and chart Id  
- [3] = Trace 0 PINx with block Id and PIN Id  
- [4] = Trace 1 PINy with DO Id and chart Id  
- [5] = Trace 1 PINy with block Id and PIN Id

#### p4732[0...5] Trace record signal 2 / Trace record sig 2

**CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**

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<tr>
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<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 0

**Description:** Selects the third signal to be traced.

**Index:**
- [0] = Trace 0 parameter in BICO format  
- [1] = Trace 1 parameter in BICO format
### List of parameters

#### p4733[0...5] Trace record signal 3 / Trace record sig 3

| Parameter | Description | Index | Data type | P-Group | Units group | Expert list | Factory setting |
|-----------|-------------|-------|-----------|---------|-------------|-------------|----------------|----------------|
| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN | Can be changed: U, T | [0] = Trace 0 parameter in BICO format | Unsigned32 | Trace and function generator | - | - | - |
| | | [1] = Trace 1 parameter in BICO format | | | - | - | - |
| | | [2] = Trace 0 PINx with DO Id and chart Id | | | - | - | - |
| | | [3] = Trace 0 PINx with block Id and PIN Id | | | - | - | - |
| | | [4] = Trace 1 PINy with DO Id and chart Id | | | - | - | - |
| | | [5] = Trace 1 PINy with block Id and PIN Id | | | - | - | - |
| | | | | | - | - | - |

#### p4734[0...5] Trace record signal 4 / Trace record sig 4

| Parameter | Description | Index | Data type | P-Group | Units group | Expert list | Factory setting |
|-----------|-------------|-------|-----------|---------|-------------|-------------|----------------|----------------|
| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN | Can be changed: U, T | [0] = Trace 0 parameter in BICO format | Unsigned32 | Trace and function generator | - | - | - |
| | | [1] = Trace 1 parameter in BICO format | | | - | - | - |
| | | [2] = Trace 0 PINx with DO Id and chart Id | | | - | - | - |
| | | [3] = Trace 0 PINx with block Id and PIN Id | | | - | - | - |
| | | [4] = Trace 1 PINy with DO Id and chart Id | | | - | - | - |
| | | [5] = Trace 1 PINy with block Id and PIN Id | | | - | - | - |
| | | | | | - | - | - |

#### p4735[0...5] Trace record signal 5 / Trace record sig 5

| Parameter | Description | Index | Data type | P-Group | Units group | Expert list | Factory setting |
|-----------|-------------|-------|-----------|---------|-------------|-------------|----------------|----------------|
| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN | Can be changed: U, T | [0] = Trace 0 parameter in BICO format | Unsigned32 | Trace and function generator | - | - | - |
| | | [1] = Trace 1 parameter in BICO format | | | - | - | - |
| | | [2] = Trace 0 PINx with DO Id and chart Id | | | - | - | - |
| | | [3] = Trace 0 PINx with block Id and PIN Id | | | - | - | - |
| | | [4] = Trace 1 PINy with DO Id and chart Id | | | - | - | - |
| | | [5] = Trace 1 PINy with block Id and PIN Id | | | - | - | - |
| | | | | | - | - | - |
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Function diagram</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
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<tr>
<td><strong>p4736[0...5]</strong></td>
<td>Trace record signal 6 / Trace record sig 6</td>
<td></td>
<td></td>
<td>Can be changed: U, T</td>
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<td>P-Group: Trace and function generator</td>
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<td>Min</td>
<td>Max</td>
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<td></td>
<td>Data type: Unsigned32</td>
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<td>CU_G150_PN</td>
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</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Selects the seventh signal to be traced.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Trace 0 parameter in BICO format</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = Trace 1 parameter in BICO format</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = Trace 0 PINx with DO Id and chart Id</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3] = Trace 0 PINx with block Id and PIN Id</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[4] = Trace 1 PINy with DO Id and chart Id</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[5] = Trace 1 PINy with block Id and PIN Id</td>
<td></td>
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</tr>
</tbody>
</table>

| **p4737[0...5]** | Trace record signal 7 / Trace record sig 7 | | | Can be changed: U, T | Calculated: - | Access level: 3 | P-Group: Trace and function generator | NOT FOR MOTOR TYPE: - | Min | Max | 0 |
| CU_G130_DP, | | | | Data type: Unsigned32 | Dynamic index: - | | | | | |
| CU_G130_PN, | | | | | | | | | | |
| CU_G150_DP, | | | | | | | | | | |
| CU_G150_PN | | | | | | | | | | |
| **Description:** | Selects the eighth signal to be traced. | | | | | | | | | |
| **Index:** | [0] = Trace 0 parameter in BICO format | | | | | | | | | |
| | [1] = Trace 1 parameter in BICO format | | | | | | | | | |
| | [2] = Trace 0 PINx with DO Id and chart Id | | | | | | | | | |
| | [3] = Trace 0 PINx with block Id and PIN Id | | | | | | | | | |
| | [4] = Trace 1 PINy with DO Id and chart Id | | | | | | | | | |
| | [5] = Trace 1 PINy with block Id and PIN Id | | | | | | | | | |

| **r4740[0...16383]** | Trace 0 trace buffer signal 0 floating point / Trace 0 tr sig 0 | | | Can be changed: - | Calculated: - | Access level: 3 | P-Group: Trace and function generator | NOT FOR MOTOR TYPE: - | Min | Max | 0 |
| CU_G130_DP, | | | | Data type: FloatingPoint32 | Dynamic index: - | | | | | |
| CU_G130_PN, | | | | | | | | | | |
| CU_G150_DP, | | | | | | | | | | |
| CU_G150_PN | | | | | | | | | | |
| **Description:** | Displays the trace buffer (record buffer) for trace 0 and signal 0. | | | | | | | | | |
| | The trace (record) buffer is sub-divided into memory banks, each containing 16384 values. Parameter p4795 can be used to toggle between the individual banks. | | | | | | | | | |
| | Example A: | | | | | | | | | |
| | The first 16384 values of signal 0, trace 0 are to be read out. | | | | | | | | | |
| | In this case, memory bank 0 is set with p4795 = 0. The first 16384 values can now be read out using r4740[0] to r4740[16383]. | | | | | | | | | |
| | Example B: | | | | | | | | | |
| | The values 16385 to 32768 from signal 0, trace 0 are to be read out. | | | | | | | | | |
| | In this case, memory bank 1 is set with p4795 = 1. The values can now be read out in r4740[0] to r4740[16383]. | | | | | | | | | |
| **Dependency:** | Refer to: p4795 | | | | | | | | | |
### r4741[0...16383] Trace 0 trace buffer signal 1 floating point / Trace 0 tr sig 1

<table>
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<tr>
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<th>Value</th>
<th>Description</th>
<th>Dependency</th>
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<td>CU_G130_DP</td>
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<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
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<td>Calculated: -</td>
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<tr>
<td>CU_G150_DP</td>
<td></td>
<td>Access level: 3</td>
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</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td>Dynamic index: -</td>
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<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the trace buffer (record buffer) for trace 0 and signal 1.

### r4742[0...16383] Trace 0 trace buffer signal 2 floating point / Trace 0 tr sig 2

<table>
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<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependency</th>
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<td>CU_G130_DP</td>
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<td>Can be changed: -</td>
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</tr>
<tr>
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<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the trace buffer (record buffer) for trace 0 and signal 2.

### r4743[0...16383] Trace 0 trace buffer signal 3 floating point / Trace 0 tr sig 3

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependency</th>
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</thead>
<tbody>
<tr>
<td>CU_G130_DP</td>
<td></td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>CU_G130_PN</td>
<td></td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP</td>
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</tr>
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<td>CU_G150_PN</td>
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<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the trace buffer (record buffer) for trace 0 and signal 3.

### r4744[0...16383] Trace 0 trace buffer signal 4 floating point / Trace 0 tr sig 4

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependency</th>
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<td>CU_G130_DP</td>
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<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>CU_G130_PN</td>
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<td>Dynamic index: -</td>
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<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
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</tr>
<tr>
<td>Max</td>
<td>-</td>
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<td></td>
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</tbody>
</table>

Description: Displays the trace buffer (record buffer) for trace 0 and signal 4.

### r4745[0...16383] Trace 0 trace buffer signal 5 floating point / Trace 0 tr sig 5

<table>
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<th>Value</th>
<th>Description</th>
<th>Dependency</th>
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</thead>
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</tr>
<tr>
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<td>CU_G150_PN</td>
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<td>Dynamic index: -</td>
<td></td>
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<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
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</tr>
<tr>
<td>Max</td>
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</table>

Description: Displays the trace buffer (record buffer) for trace 0 and signal 5.
List of parameters

<table>
<thead>
<tr>
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<th>Type</th>
<th>Description</th>
<th>Access level</th>
<th>Dependencies</th>
</tr>
</thead>
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</tbody>
</table>
### r4753[0...16383] Trace 1 trace buffer signal 3 floating point / Trace 1 tr sig 3

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>CU_G130_PN, CU_G150_PN</strong></td>
<td>Data type: FloatingPoint32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group: Trace and function generator</strong></td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type: -</strong></td>
<td>Scaling: - Expert list: 0</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4740, p4795

### r4754[0...16383] Trace 1 trace buffer signal 4 floating point / Trace 1 tr sig 4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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</thead>
<tbody>
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<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
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</table>

**Dependency:** Refer to: r4740, p4795

### r4755[0...16383] Trace 1 trace buffer signal 5 floating point / Trace 1 tr sig 5

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<td><strong>P-Group: Trace and function generator</strong></td>
<td>Units group: - Unit selection: -</td>
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</table>

**Dependency:** Refer to: r4740, p4795

### r4756[0...16383] Trace 1 trace buffer signal 6 floating point / Trace 1 tr sig 6

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<td>Units group: - Unit selection: -</td>
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**Dependency:** Refer to: r4740, p4795

### r4757[0...16383] Trace 1 trace buffer signal 7 floating point / Trace 1 tr sig 7

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<td>Max Factory setting</td>
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**Dependency:** Refer to: r4740, p4795
### Description:
Displays the trace buffer (record buffer) for trace 0 and signal 0 as integer number.

### Note:
For signals, data type I32 or U32, the trace buffer is assigned as follows:

- \( r_{4760}[0] = \text{value 0} \)
- \( r_{4760}[1] = \text{value 1} \)
- ... 
- \( r_{4760}[8191] = \text{value 8191} \)

For signals, data type I16 or U16, the trace buffer is assigned as follows:

- \( r_{4760}[0] = \text{value 0 (bit 31 ... 16) and value 1 (bit 15 ... 0)} \)
- \( r_{4760}[1] = \text{value 2 (bit 31 ... 16) and value 3 (bit 15 ... 0)} \)
- ... 
- \( r_{4760}[8191] = \text{value 16382 (bit 31 ... 16) and value 16383 (bit 15 ... 0)} \)

For signals, data type I8 or U8, the trace buffer is assigned as follows:

- \( r_{4760}[0] = \text{value 0 (bit 31 ... 24) value 1 (bit 23 ... 16) value 2 (bit 15 ... 8) value 3 (bit 7 ... 0)} \)
- \( r_{4760}[1] = \text{value 4 (bit 31 ... 24) value 5 (bit 23 ... 16) value 6 (bit 15 ... 8) value 7 (bit 7 ... 0)} \)
- ... 
- \( r_{4760}[8191] = \text{value 32764 (bit 31 ... 24) value 32765 (bit 23 ... 16) value 32766 (bit 15 ... 8) value 32767 (bit 7 ... 0)} \)

### r4760[0...16383] Trace 0 trace buffer signal 0 / Trace 0 tr sig 0

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### Description:
Displays the trace buffer (record buffer) for trace 0 and signal 1.

### Dependency:
Refer to: r4760

### r4761[0...16383] Trace 0 trace buffer signal 1 / Trace 0 tr sig 1

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### Description:
Displays the trace buffer (record buffer) for trace 0 and signal 2.

### Dependency:
Refer to: r4760

### r4762[0...16383] Trace 0 trace buffer signal 2 / Trace 0 tr sig 2

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### Description:
Displays the trace buffer (record buffer) for trace 0 and signal 2.

### Dependency:
Refer to: r4760
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<tr>
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<td>Trace 0 trace buffer signal 3 / Trace 0 tr sig 3</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 3.</td>
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<td>r4764[0...16383]</td>
<td>Trace 0 trace buffer signal 4 / Trace 0 tr sig 4</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 4.</td>
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<td>r4765[0...16383]</td>
<td>Trace 0 trace buffer signal 5 / Trace 0 tr sig 5</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 5.</td>
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<tr>
<td>r4766[0...16383]</td>
<td>Trace 0 trace buffer signal 6 / Trace 0 tr sig 6</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 6.</td>
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<td>r4767[0...16383]</td>
<td>Trace 0 trace buffer signal 7 / Trace 0 tr sig 7</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 7.</td>
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### List of parameters

#### r4770[0...16383] Trace 1 trace buffer signal 0 / Trace 1 trace sig0

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 0.
**Dependency:** Refer to: r4760

#### r4771[0...16383] Trace 1 trace buffer signal 1 / Trace 1 tr sig 1

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 1.
**Dependency:** Refer to: r4760

#### r4772[0...16383] Trace 1 trace buffer signal 2 / Trace 1 tr sig 2

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 2.
**Dependency:** Refer to: r4760

#### r4773[0...16383] Trace 1 trace buffer signal 3 / Trace 1 tr sig 3

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 3.
**Dependency:** Refer to: r4760

#### r4774[0...16383] Trace 1 trace buffer signal 4 / Trace 1 tr sig 4

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 4.
**Dependency:** Refer to: r4760
### r4775[0...16383] Trace 1 trace buffer signal 5 / Trace 1 tr sig 5

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 5.

**Dependency:** Refer to: r4760

### r4776[0...16383] Trace 1 trace buffer signal 6 / Trace 1 tr sig 6

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 6.

**Dependency:** Refer to: r4760

### r4777[0...16383] Trace 1 trace buffer signal 7 / Trace 1 tr sig 7

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**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 7.

**Dependency:** Refer to: r4760

### p4780[0...1] Trace physical address signal 0 / Trace PhyAddr Sig0

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<td>Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>Unchanged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 bin</td>
<td>1111 1111 1111 1111 1111 1111 1111 1111</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the physical address for the first signal to be traced.

The data type is defined using p4730.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

### p4781[0...1] Trace physical address signal 1 / Trace PhyAddr Sig1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>U, T</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>Unchanged</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 bin</td>
<td>1111 1111 1111 1111 1111 1111 1111 1111</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the physical address for the second signal to be traced.
## Parameters

### List of parameters

The data type is defined using p4731.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

**p4782[0...1]**  
**Trace physical address signal 2 / Trace PhyAddr Sig2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 bin</td>
</tr>
<tr>
<td>Max</td>
<td>1111 1111 1111 1111 1111 1111</td>
</tr>
</tbody>
</table>

**Description:**
Sets the physical address for the third signal to be traced.

The data type is defined using p4732.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

**p4783[0...1]**  
**Trace physical address signal 3 / Trace PhyAddr Sig3**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 bin</td>
</tr>
<tr>
<td>Max</td>
<td>1111 1111 1111 1111 1111 1111</td>
</tr>
</tbody>
</table>

**Description:**
Sets the physical address for the fourth signal to be traced.

The data type is defined using p4733.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

**p4784[0...1]**  
**Trace physical address signal 4 / Trace PhyAddr Sig4**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 bin</td>
</tr>
<tr>
<td>Max</td>
<td>1111 1111 1111 1111 1111 1111</td>
</tr>
</tbody>
</table>

**Description:**
Sets the physical address for the fifth signal to be traced.

The data type is defined using p4734.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

**p4785[0...1]**  
**Trace physical address signal 5 / Trace PhyAddr Sig5**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 bin</td>
</tr>
<tr>
<td>Max</td>
<td>1111 1111 1111 1111 1111 1111</td>
</tr>
</tbody>
</table>

**Description:**
Sets the physical address for the sixth signal to be traced.

The data type is defined using p4735.

**Index:**
- [0] = Trace 0
- [1] = Trace 1
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4786[0...1]</td>
<td>Trace physical address signal 6 / Trace PhyAddr Sig6</td>
<td>[0] = Trace 0</td>
<td>[1] = Trace 1</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>p4787[0...1]</td>
<td>Trace physical address signal 7 / Trace PhyAddr Sig7</td>
<td>[0] = Trace 0</td>
<td>[1] = Trace 1</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>p4789[0...1]</td>
<td>Trace physical address trigger signal / Trace PhyAddr Trig</td>
<td>[0] = Trace 0</td>
<td>[1] = Trace 1</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>r4790[0...1]</td>
<td>Trace, data type 5 traced / Trace rec type 5</td>
<td>[0] = Trace 0</td>
<td>[1] = Trace 1</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td>Expert list: 0</td>
</tr>
</tbody>
</table>

- **Description:**
  - Sets the physical address for the seventh signal to be traced.
  - The data type is defined using p4736.

- **Index:**
  - [0] = Trace 0
  - [1] = Trace 1

- **Description:**
  - Sets the physical address for the eighth signal to be traced.
  - The data type is defined using p4737.

- **Index:**
  - [0] = Trace 0
  - [1] = Trace 1

- **Description:**
  - Sets the physical address for the trigger signal.
  - The data type is defined by making the appropriate selection in p4711.

- **Index:**
  - [0] = Trace 0
  - [1] = Trace 1

- **Description:**
  - Displays the recorded data type 5 for the trace.

- **Index:**
  - [0] = Trace 0
  - [1] = Trace 1
### Parameters

#### List of parameters

#### r4791[0...1]
**Trace, data type 6 traced / Trace rec type 6**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the recorded data type 6 for the trace.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

#### r4792[0...1]
**Trace, data type 7 traced / Trace rec type 7**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the recorded data type 7 for the trace.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

#### r4793[0...1]
**Trace, data type 8 traced / Trace rec type 8**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the recorded data type 8 for the trace.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

#### p4795
**Trace memory bank changeover / Trace mem changeov**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>500</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Changes over the memory bank to read out the contents of the trace buffer.

**Dependency:**
Refer to: r4740, r4741, r4742, r4743, r4750, r4751, r4752, r4753

#### r4799
**Trace memory location free / Trace mem free**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
</tr>
<tr>
<td>Access level</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Unit selection</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>0</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the free memory for the trace in bytes.

**Dependency:**
Refer to: r4708
p4800 Function generator control / FG control

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Not for motor type:** -
- **Min**
- **Max**
- **Description:** The function generator is started with p4800 = 1. The signal is only generated for a 1 signal of binector input p4819.
- **Value:**
  - 0: Stop function generator
  - 1: Start function generator
  - 2: Check function generator parameterization
  - 3: Start function generator without enable signals
- **Dependency:** Refer to: p4819

---

r4805 Function generator status / FG status

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Not for motor type:** -
- **Min**
- **Max**
- **Description:** Displays the actual status of the function generator.
- **Value:**
  - 0: Inactive
  - 1: Generate accelerating ramp to offset
  - 2: Generate parameterized signal shape
  - 3: Generate braking ramp
  - 4: Function generator stopped due to missing enable signals
  - 5: Function generator waits for BI: p4819
  - 6: Function generator parameterization has been checked
- **Dependency:** Refer to: p4800, p4819

---

r4806.0 BO: Function generator status signal / FG status signal

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Unsigned32
- **P-Group:** Trace and function generator
- **Not for motor type:** -
- **Min**
- **Max**
- **Description:** Displays the status of the function generator.
- **Bit field:**
  - Bit 0: Signal name
  - 00: OFF
  - 01: ON
- **Dependency:**
  - 0 signal: Function generator inactive
  - 1 signal: Function generator running

---

p4810 Function generator mode / FG operating mode

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Not for motor type:** -
- **Min**
- **Max**
- **Description:** Sets the operating mode of the function generator.
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Value:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>Connection at connector output r4818</td>
</tr>
<tr>
<td>1:</td>
<td>Connection at current setpoint after filter and r4818</td>
</tr>
<tr>
<td>2:</td>
<td>Connection as disturbing torque and r4818</td>
</tr>
<tr>
<td>3:</td>
<td>Connection at speed setpoint after filter and r4818</td>
</tr>
<tr>
<td>4:</td>
<td>Connection at current setpoint before filter and r4818</td>
</tr>
<tr>
<td>5:</td>
<td>Connection at speed setpoint before filter and r4818</td>
</tr>
<tr>
<td>6:</td>
<td>Connection for free measurement function r4818 and r4834</td>
</tr>
<tr>
<td>99:</td>
<td>Connection at physical address and r4818</td>
</tr>
</tbody>
</table>

**p4812** Function generator physical address / FG phys address

Can be changed: U, T

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4812</strong></td>
<td></td>
<td>Function generator physical address / FG phys address</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Max</td>
<td>4294967295</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p4813** Function generator physical address reference value / FG phys addr ref

Can be changed: U, T

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4813</strong></td>
<td></td>
<td>Function generator physical address reference value / FG phys addr ref</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>1.00</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Max</td>
<td>1000000.00</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p4815[0...2]** Function generator drive number / FG drive number

Can be changed: U, T

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4815[0...2]</strong></td>
<td></td>
<td>Function generator drive number / FG drive number</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Max</td>
<td>65535</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p4816** Function generator output signal integer number scaling / FG outp integ scal

Can be changed: U, T

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4816</strong></td>
<td></td>
<td>Function generator output signal integer number scaling / FG outp integ scal</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>-2147483648</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>2147483647</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p4818** Function generator output signal integer number scaling / FG outp integ scal

Can be changed: U, T

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4818</strong></td>
<td></td>
<td>Function generator output signal integer number scaling / FG outp integ scal</td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>-2147483648</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>2147483647</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Note:** The parameter can only be changed in the following operating states:
r4805 = 0, 4, 6
### List of parameters

#### r4817
**CO: Function generator output signal integer number / FG outp integ no.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display and connector output for the integer number of the output signal for the function generator.</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Display and connector output for the integer number of the output signal for the function generator.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

#### r4818
**CO: Function generator output signal / FG outp_sigs**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the output signal for the function generator.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays the output signal for the function generator.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>- [%]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

#### p4819
**BI: Function generator control / FG control**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source to control the function generator.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>When the function generator is running, signal generation is stopped with a 0 signal from BI: p4819 and p4800 is set to 0.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to:</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the signal source to control the function generator.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p4820
**Function generator signal shape / FG signal shape**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal to be generated for the function generator.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Square-wave</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Staircase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: Delta</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: Binary noise - PRBS (Pseudo Random Binary Signal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5: Sine-wave</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>1</td>
<td>Factory setting</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>
### p4821 Function generator period / FG period duration

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4821</td>
<td>Sets the period of the signal to be generated for the function generator.</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>1000.00 [ms]</td>
</tr>
<tr>
<td></td>
<td>Ineffective when p4820 = 4 (PRBS).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [ms]</td>
<td>60000.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

### p4822 Function generator pulse width / FG pulse width

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4822</td>
<td>Sets the pulse width for the signal to be generated for the function generator.</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>500.00 [ms]</td>
</tr>
<tr>
<td></td>
<td>Only effective when p4820 = 1 (square-wave).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [ms]</td>
<td>60000.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

### p4823 Function generator bandwidth / FG bandwidth

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4823</td>
<td>Sets the bandwidth for the signal to be generated for the function generator.</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>4000.0000 [Hz]</td>
</tr>
<tr>
<td></td>
<td>Only effective when p4820 = 4 (PRBS).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: p4830</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: A02041</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p4824 Function generator amplitude / FG amplitude

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4824</td>
<td>Sets the amplitude for the signal to be generated for the function generator.</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>5.00 [%]</td>
</tr>
<tr>
<td></td>
<td>Units are dependent on p4810.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-1600.00 [%]</td>
<td>1600.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units</th>
<th>if p4810 = 1, 2, 4: The amplitude is referred to p2002 (reference current).</th>
</tr>
</thead>
</table>
### List of parameters

#### p4825 Function generator 2nd amplitude / FG 2nd amplitude

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4825</td>
<td>Sets the second amplitude for the signal to be generated for the function generator.</td>
<td>Only effective for p4820 = 2 (staircase). Units are dependent on p4810. If p4810 = 1, 2, 4: The amplitude is referred to p2002 (reference current). If p4810 = 3, 5: The amplitude is referred to p2000 (reference speed).</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>7.00 [%]</td>
</tr>
</tbody>
</table>

#### p4826 Function generator offset / FG offset

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4826</td>
<td>Sets the offset (DC component) of the signal to be generated for the function generator.</td>
<td>Units are dependent on p4810. If p4810 = 1, 2, 4: The offset is referred to p2002 (reference current). If p4810 = 3, 5: The offset is referred to p2000 (reference speed). If p4810 = 2: In order to avoid the undesirable effects of play (backlash), the offset does not act on the current setpoint, but instead on the speed setpoint.</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0.00 [%]</td>
</tr>
</tbody>
</table>

#### p4827 Function generator ramp-up time to offset / FG ramp-up offset

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4827</td>
<td>Sets the ramp-up time to the offset for the function generator.</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>32.00 [ms]</td>
</tr>
</tbody>
</table>

#### p4828 Function generator lower limit / FG lower limit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Func. diagram</th>
<th>Units group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4828</td>
<td>Sets the lower limit for the function generator.</td>
<td>For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-100.00 [%]</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

---

**p4829 Function generator upper limit / FG upper limit**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4829</td>
<td>Function generator upper limit / FG upper limit</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Data type: FloatingPoint32
- P-Group: Trace and function generator
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [%]</td>
<td>10000.00 [%]</td>
<td>100.00 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the upper limit for the function generator.
Dependency: For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).

---

**p4830 Function generator time slice cycle / FG time slice**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4830</td>
<td>Function generator time slice cycle / FG time slice</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Data type: FloatingPoint32
- P-Group: Trace and function generator
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03125 [ms]</td>
<td>2.00000 [ms]</td>
<td>0.12500 [ms]</td>
</tr>
</tbody>
</table>

Description: Sets the time slice cycle in which the function generator is called.

---

**p4831 Function generator amplitude scaling / FG amplitude scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4831</td>
<td>Function generator amplitude scaling / FG amplitude scal</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Data type: FloatingPoint32
- P-Group: Trace and function generator
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00000 [%]</td>
<td>200.00000 [%]</td>
<td>100.00000 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the amplitude for the amplitude of the signal waveforms for all output channels.
The value can be changed while the function generator is running.

---

**p4832[0...2] Function generator amplitude scaling / FG amplitude scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4832</td>
<td>Function generator amplitude scaling / FG amplitude scal</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Data type: FloatingPoint32
- P-Group: Trace and function generator
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-340.28235E36 [%]</td>
<td>340.28235E36 [%]</td>
<td>100.00000 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the scaling for the amplitude of the signal waveforms separately for each output channel.
The value cannot be changed while the generator is running.

Index:

0 = First drive for connection
1 = Second drive for connection
2 = Third drive for connection

---

**p4833[0...2] Function generator offset scaling / FG offset scal**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4833</td>
<td>Function generator offset scaling / FG offset scal</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Data type: FloatingPoint32
- P-Group: Trace and function generator
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-340.28235E36 [%]</td>
<td>340.28235E36 [%]</td>
<td>100.00000 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the scaling for the offset of the signal waveforms separately for each output channel.
The value cannot be changed while the function generator is running.
Index: [0] = First drive for connection  
[1] = Second drive for connection  
[2] = Third drive for connection

### r4834[0...4] CO: Function generator free measurement output signal / FG fr MeasFct outp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>Trace and function generator</td>
<td>-</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the output signal for the free measurement function.

Index: [0] = Signal 1  
[1] = Signal 2  
[2] = Signal 3  
[3] = Signal 4  

Dependency: Refer to: p4810

Note: The signals are only output in the "free measurement function" operating mode (p4810 = 6)

### p4835[0...4] Function generator free measurement function scaling / FG fr MeasFct scal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>U, T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-200.00000 [%]</td>
<td>200.00000 [%]</td>
<td>100.00000 [%]</td>
</tr>
</tbody>
</table>

Description: Sets the scaling of the output signals for the free measurement function.

Index: [0] = Signal 1  
[1] = Signal 2  
[2] = Signal 3  
[3] = Signal 4  

Note: The parameter cannot be changed when the measurement function has been started (r4706 = 2, 3).

### r4950 OA application count / OA no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>-</td>
<td>Unsigned16</td>
<td>OEM range</td>
<td>-</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the number of OA applications installed on the memory card/device memory.

Dependency: Refer to: r4951, r4952, r4955, p4956, r4957, r4958, r4959, r4960

Note: OA: Open Architecture
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4951</td>
<td>OA application identifier, total length / OA ID length</td>
<td>Displays the total length of the IDs of all the OA applications installed on the memory card/device memory.</td>
<td>The identifier of an OA application comprises a maximum of 8 characters plus separator.</td>
</tr>
<tr>
<td>B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, TM150, TM54F_MA, TM54F_SL, VECTOR_G</td>
<td>Can be changed: -</td>
<td>Refer to: r4950, r4952, p4956, r4957, r4958, r4959, r4960</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
<td></td>
</tr>
<tr>
<td>P-Group: OEM range</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>90</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

| r4952     | OA application GUID, total length / OA GUID length | Displays the total length of the GUIDs of all the OA applications installed on the memory card/device memory. | The identifier of an OA application comprises 16 characters plus 1 character major information plus 1 character, minor information. GUID: Globally Unique IDentifier |
| B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, TM150, TM54F_MA, TM54F_SL, VECTOR_G | Can be changed: - | Refer to: r4950, r4951, r4955, p4956, r4957, r4958, r4959, r4960 | |
| Data type: Unsigned16 | Calculated: - | Access level: 4 | |
| P-Group: OEM range | Dynamic index: - | Func. diagram: - | |
| Not for motor type: - | Units group: - | Unit selection: - | |
| Min | Max | Factory setting |
| 0 | 180 | - |

| r4952     | OA application GUID, total length / OA GUID length | Displays the total length of the GUIDs of all the OA applications installed on the memory card/device memory. | The identifier of an OA application comprises 16 characters plus 1 character major information plus 1 character, minor information. GUID: Globally Unique IDentifier |
| ENC, HUB, TB30, TM31 | Can be changed: - | Refer to: r4950, r4952, p4956, r4957, r4958, r4959, r4960 | |
| Data type: Unsigned16 | Calculated: - | Access level: 4 | |
| P-Group: OEM range | Dynamic index: - | Func. diagram: - | |
| Not for motor type: - | Units group: - | Unit selection: - | |
| Min | Max | Factory setting |
| 0 | 180 | - |
### List of parameters

#### r4955[0...n] OA application identifier / OA ID

- **B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, TM150, TM54F_MA, TM54F_SL, VECTOR_G**
- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** OEM range
- **Not for motor type:** -
- **Description:** Displays the IDs of all the OA applications installed on the memory card/device memory.
  - r4955[0...8]: Identifier of OA application 1
  - r4955[9...17]: Identifier of OA applications 2, ...
- **Dependency:** Refer to: r4950, r4951, r4952, p4956, r4957, r4958, r4959, r4960
- **Notice:** If there is no OA application, then it is not possible to access an index.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

#### p4956[0...n] OA application activation / OA act

- **B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, TM150, TM54F_MA, TM54F_SL, VECTOR_G**
- **Can be changed:** C1, T
- **Data type:** Integer16
- **P-Group:** OEM range
- **Not for motor type:** -
- **Description:** Setting to activate the OA applications installed on the memory card/device memory.
  - r4956[0]: Activates OA application 1
  - r4956[1]: Activates OA application 2, ...
- **Value:**
  - 0: OA application inactive
  - 1: OA application active
- **Dependency:** Refer to: r4950, r4951, r4952, r4955, r4957, r4958, r4959, r4960
- **Notice:** If there is no OA application, then it is not possible to access an index.
**p4956[0...n]**

**OA application activation / OA act**

<table>
<thead>
<tr>
<th>ENC, HUB, TB30, TM31</th>
</tr>
</thead>
</table>

- **Can be changed:** C1, T
- **Calculated:** -
- **Access level:** 4
- **Data type:** Integer16
- **Dynamic index:** r4950
- **P-Group:** OEM range
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 0
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Setting to activate the OA applications installed on the memory card/device memory.

- r4956[0]: Activates OA application 1
- r4956[1]: Activates OA application 2, ...

**Value:**
- 0: OA application inactive
- 1: OA application active

**Dependency:**
Refer to: r4950, r4951, r4955, r4957, r4958, r4959, r4960

**Notice:**
If there is no OA application, then it is not possible to access an index.

---

**r4957[0...n]**

**OA application version / OA version**

<table>
<thead>
<tr>
<th>ENC, HUB, TB30, TM31</th>
</tr>
</thead>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** Unsigned32
- **Dynamic index:** r4950
- **P-Group:** OEM range
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

**Min**

- **Max**
- **Factory setting**
  - 4294967295

**Description:**
Displays the versions of the OA applications installed on the memory card/device memory.

- r4957[0]: Version of OA application 1
- r4957[1]: Version of OA application 2, ...

**Dependency:**
Refer to: r4950, r4951, r4952, r4955, p4956, r4958, r4959, r4960

**Notice:**
If there is no OA application, then it is not possible to access an index.

**Note:**
Example:
The value 1010100 should be interpreted as V01.01.01.00.

---

**r4957[0...n]**

**OA application version / OA version**

<table>
<thead>
<tr>
<th>ENC, HUB, TB30, TM31</th>
</tr>
</thead>
</table>

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 4
- **Data type:** Unsigned32
- **Dynamic index:** r4950
- **P-Group:** OEM range
- **Units group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 0
- **Min:** 0
- **Max:** 4294967295
- **Factory setting**

**Description:**
Displays the versions of the OA applications installed on the memory card/device memory.

- r4957[0]: Version of OA application 1
- r4957[1]: Version of OA application 2, ...

**Dependency:**
Refer to: r4950, r4951, r4952, r4955, p4956, r4958, r4959, r4960

**Notice:**
If there is no OA application, then it is not possible to access an index.

**Note:**
Example:
The value 1010100 should be interpreted as V01.01.01.00.
### List of parameters

#### r4958[0...n] OA application interface version / OA int_version

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the interface versions of the OA applications installed on the memory card/device memory.</td>
<td>-</td>
<td>Unsigned32</td>
<td>OEM range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>r4958[0]: Interface version of OA application 1</td>
<td>r4958[1]: Interface version of OA applications 2, ...</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice</td>
<td>If there is no OA application, then it is not possible to access an index.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>The value 1010100 should be interpreted as V01.01.01.00.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r4959[0...n] OA application GUID / OA GUID

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the GUIDs of the OA applications installed on the memory card/device memory.</td>
<td>-</td>
<td>Unsigned8</td>
<td>OEM range</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4959, r4960</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice</td>
<td>If there is no OA application, then it is not possible to access an index.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>The value 1010100 should be interpreted as V01.01.01.00.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r4959[0...n]  OA application GUID / OA GUID

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the GUIDs of the OA applications installed on the memory card/device memory.</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned8  
**P-Group:** OEM range  
**Not for motor type:** -  
**Min** | **Max**  
--- | ---  
- | -  

#### r4960[0...n]  OA application GUID drive object / OA GUID DO

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the GUIDs of the drive object of the OA applications installed on the memory card/device memory.</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned8  
**P-Group:** OEM range  
**Not for motor type:** -  
**Min** | **Max**  
--- | ---  
- | -  

---

**Parameters**

**List of parameters**

---

**r4959[0...n]  OA application GUID / OA GUID**

<table>
<thead>
<tr>
<th>ENC, HUB, TB30, TM31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td>P-Group: OEM range</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the GUIDs of the OA applications installed on the memory card/device memory.

- r4959[0...15]: GUID of OA application 1
- r4960[16]: Major information of OA application 1
- r4960[17]: Minor information of OA application 1
- r4959[18...33]: GUID of OA application 2
- r4960[34]: Major information of OA application 2
- r4960[35]: Minor information of OA application 2

**Dependency:** Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4958, r4960

**Notice:** If there is no OA application, then it is not possible to access an index.

---

**r4960[0...n]  OA application GUID drive object / OA GUID DO**

<table>
<thead>
<tr>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td>P-Group: OEM range</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the GUIDs of the drive object of the OA applications installed on the memory card/device memory.

- r4960[0...15]: GUID of this drive object of OA application 1
- r4960[16]: Major information of this drive object of OA application 1
- r4960[17]: Minor information of this drive object of OA application 1
- r4960[18...33]: GUID of this drive object of OA application 2
- r4960[34]: Major information of this drive object of OA application 2
- r4960[35]: Minor information of this drive object of OA application 2

**Dependency:** Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4958, r4959

**Notice:** If there is no OA application, then it is not possible to access an index.

---

**r4960[0...n]  OA application GUID drive object / OA GUID DO**

<table>
<thead>
<tr>
<th>ENC, HUB, TB30, TM31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td>P-Group: OEM range</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the GUIDs of the drive object of the OA applications installed on the memory card/device memory.

- r4960[0...15]: GUID of this drive object of OA application 1
- r4960[16]: Major information of this drive object of OA application 1
- r4960[17]: Minor information of this drive object of OA application 1
- r4960[18...33]: GUID of this drive object of OA application 2
- r4960[34]: Major information of this drive object of OA application 2
- r4960[35]: Minor information of this drive object of OA application 2

**Dependency:** Refer to: r4950, r4951, r4952, r4955, p4956, r4957, r4958, r4959
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Dynamic index</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4961[0...n]</td>
<td>OA application logbook module selection / OA logbook module</td>
<td></td>
<td></td>
<td></td>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
<tr>
<td>ENC, HUB, TB30, TM31</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4975</td>
<td>OA application invalid number / OA inv no.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4976</td>
<td>OA application invalid identifier, total length / OA inv ID length</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4978[0...n]</td>
<td>OA application invalid identifier / OA inv ID</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**
If there is no OA application, then it is not possible to access an index.
List of parameters

r4978[0..8]: Identifier of invalid OA application 1
r4978[9..17]: Identifier of invalid OA application 2, ...

Dependency: Refer to: r4975, r4976, r4979
Notice: If there is no invalid OA application, then it is not possible to access an index.

r4979[0...n] OA application invalid error code / OA inv error code

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Unsigned32
- **P-Group:** OEM range
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Access level:** 4
- **Dependency:** Refer to: r4975, r4976, r4979
- **Notice:** If there is no invalid OA application, then it is not possible to access an index.
- **Description:** Displays the error code of the invalid OA applications installed on the memory card/device memory.
- **Value:** r4979[0]: Fault value of OA application 1, r4979[1]: Fault value of OA application 2, ...

- **Bit 0:** Incompatible OA interface version.
- **Bit 1:** OA application could not be loaded.
- **Bit 2:** Incorrect description files.
- **Bit 3:** OA application does not define a CPU type.
- **Bit 4:** OA application for this device not supported (incorrect CPU type).
- **Bit 5:** OA application for this device not supported (incorrect type ID).
- **Bit 6:** Incorrect description files (Const/Startup incompatible).

r5600 Pe energy saving mode ID / Pe mode ID

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** Integer16
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 0
- **Max:** 255
- **Access level:** 3
- **Dependency:**
- **Notice:**
- **Description:** Displays the PROFIenergy mode ID of the effective energy saving mode.
- **Value:**
  - 0: POWER OFF
  - 2: En-saving mode 2
  - 255: Ready
- **Note:** Pe: PROFIenergy profiles

p5602[0...1] Pe energy-saving mode pause time minimal / Pe mod t_pause min

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** T
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 300000 [ms]
- **Max:** 4294967295 [ms]
- **Access level:** 3
- **Dependency:**
- **Notice:**
- **Description:** Sets the minimum possible pause time for the energy-saving mode. The value is the sum of the following times:
  - Energy-saving mode transition time
  - Operating state transition time
  - Energy-saving mode, dwell time minimal

- **Value:**
  - 0: 300000 [ms]
  - 1: 480000 [ms]
<table>
<thead>
<tr>
<th>Index:</th>
<th>[0] = Reserved</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] = Mode 2</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** It is not permissible that the value is less than the sum of the "energy-saving mode transition time" and the "operating state transition time" (system properties).  
Pe: PROFIenergy profiles

### p5606[0...1] Pe energy-saving mode dwell time maximum / Pe t_dwell max

<table>
<thead>
<tr>
<th>CU_G130_DP,</th>
<th>Can be changed: T</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Sets the maximum dwell time for the energy-saving mode.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>4294967295 [ms]</td>
<td>4294967295 [ms]</td>
</tr>
</tbody>
</table>

### p5611 Pe energy-saving properties general / Pe properties gen

<table>
<thead>
<tr>
<th>CU_G130_DP,</th>
<th>Can be changed: T</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Sets the general properties for energy-saving.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Inhibit PROFIenergy</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Pe: PROFIenergy profiles

### p5612[0...1] Pe energy-saving properties mode-dependent / Pe properties mod

<table>
<thead>
<tr>
<th>CU_G130_DP,</th>
<th>Can be changed: T</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Sets the mode-dependent properties for energy-saving.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0000000 bin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Index:</th>
<th>[0] = Reserved</th>
<th>[1] = Mode 2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Reserved</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** Pe: PROFIenergy profiles

### r5613.0...1 CO/BO: Pe energy-saving active/inactive / Pe save act/inact

<table>
<thead>
<tr>
<th>CU_G130_DP,</th>
<th>Can be changed: -</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
</tbody>
</table>

**Data type:** Unsigned8  
**Dynamic index:** -  
**Units group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Display and binector output for the state display PROFIenergy energy saving active or inactive.
Bit field: Bit  Signal name  1 signal  0 signal  FP
00  Pe active  Yes  No  -
01  Pe inactive  Yes  No  -

Note: Bit 0 and bit 1 are inverse of one another.
Pe: PROFIenergy profiles

### p6397 Motor module phase shift second system / MM ph_sh 2nd sys

**VECTOR_G**
- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Converter
- **Min:** 0
- **Value:**
  - 0: Shift by +30 °
  - 1: Shift by -30 °
  - 2: Shift by 0 °
- **Dependency:** Refer to: p7003
- **Notice:**
  - The parameter is only evaluated if p7003 = 2.
  - For p6397 = 0 the following applies: The second systems leads for a positive direction of rotation.
  - For p6397 = 1 the following applies: The second systems lags for a positive direction of rotation.

### r7000 Par_circuit No. of active power units / Qty active PU

**B_INF (Parallel), VECTOR_G (Parallel)**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Modulation
- **Min:** -
- **Dependency:** Refer to: p7001

### p7001[0...n] Par_circuit power units enable / PU enable

**B_INF (Parallel), VECTOR_G (Parallel)**
- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Modulation
- **Min:** 0
- **Value:**
  - 0: De-activated
  - 1: Activated
- **Dependency:** Refer to: r7000
- **Note:**
  - For motors with separate winding systems (p7003 = 1) it is not possible to inhibit an individual power unit.
  - p7001 is automatically reset if a power unit is de-activated via p0125 or p0895.
### List of parameters

#### r7002[0...n]
**Par_circuit status power units / Status PU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7002[0...n]</td>
<td>Displays the status of the power units in the parallel circuit configuration.</td>
<td></td>
<td>Refer to: r7000, p7001</td>
</tr>
</tbody>
</table>

- **B_INF (Parallel), VECTOR_G (Parallel)**
- **Data type:** Integer16
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** |

#### p7003
**Par_circuit winding system / Wind_sys**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7003</td>
<td>Specifies the motor winding system when power units are connected in parallel.</td>
<td></td>
<td>Refer to: p1802, p6397</td>
</tr>
</tbody>
</table>

- **VECTOR_G (Parallel)**
- **Data type:** Integer16
- **P-Group:** Converter
- **Not for motor type:** -
- **Min:** 0
- **Max:** 2
- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** |

#### p7010
**Par_circuit current dissymmetry alarm threshold / i_dissym A thresh**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7010</td>
<td>Sets the alarm threshold to detect current dissymmetry in the parallel circuit configuration. The deviation between the measured values and average value is evaluated. The specified value is referred to the rated power unit current (p7251[0]).</td>
<td></td>
<td>Refer to: r7251, A05052</td>
</tr>
</tbody>
</table>

- **VECTOR_G (Parallel)**
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 2 [%]
- **Max:** 100 [%]
- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 20 [%]
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Settings</th>
<th>Dependencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p7011</strong></td>
<td>Par_circuit DC link voltage dissymmetry alarm threshold / Vdc_dissym A thrsh</td>
<td>B_INF (Parallel), VECTOR_G (Parallel)</td>
<td>Sets the alarm threshold to detect dissymmetry of the DC link voltages in the parallel circuit configuration. The deviation between the measured values and average value is evaluated. The specified value is referred to the rated link voltage.</td>
</tr>
<tr>
<td><strong>p7015</strong></td>
<td>Par_circuit holding brake power unit data set / Brake PDS</td>
<td>VECTOR_G (Parallel)</td>
<td>Sets the power unit data set for a parallel connection via which the holding brake is controlled.</td>
</tr>
<tr>
<td><strong>r7020[0...n]</strong></td>
<td>CO: Par_circuit deviation current in phase U / Phase U curr dev</td>
<td>VECTOR_G (Parallel)</td>
<td>Displays the deviation between the measured current actual value of phase U and the average value as peak value. The maximum deviation from the average value is displayed in r7025.</td>
</tr>
</tbody>
</table>

**p7011**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 2 [%]
- **Max:** 100 [%]
- **Access level:** 3
- **Dependency:**
  - Refer to: A05053

**p7015**
- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Converter
- **Not for motor type:** -
- **Min:** 0
- **Max:** 99
- **Access level:** 3
- **Dependency:**
  - Refer to: p0120, p0121

**r7020[0...n]**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** - [A]
- **Max:** - [A]
- **Access level:** 3
- **Dependency:**
  - Refer to: r7021, r7022, r7025

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7021[0...n]</td>
<td>CO: Par_circuit deviation current in phase V / Phase V curr dev</td>
<td>Displays the deviation between the measured current actual value of phase V and the average value as peak value. The maximum deviation from the average value is displayed in r7026.</td>
</tr>
<tr>
<td>r7022[0...n]</td>
<td>CO: Par_circuit deviation current in phase W / Phase W curr dev</td>
<td>Displays the deviation between the measured current actual value of phase W and the average value as peak value. The maximum deviation from the average value is displayed in r7027.</td>
</tr>
<tr>
<td>r7025</td>
<td>CO: Par_circuit max. deviation currents phase U / Phase U Max i_dev</td>
<td>Displays the maximum absolute deviation of the measured current actual values of phase U from the average value as peak value. The deviation of the individual currents from the average value is displayed in r7020.</td>
</tr>
<tr>
<td>r7026</td>
<td>CO: Par_circuit max. deviation currents phase V / Phase V Max i_dev</td>
<td>Displays the maximum absolute deviation of the measured current actual values of phase V from the average value as peak value. The deviation of the individual currents from the average value is displayed in r7021.</td>
</tr>
</tbody>
</table>
### Description:
Displays the maximum absolute deviation of the measured current actual values of phase W from the average value as peak value.

Dependency:
Refer to: r7022, r7025, r7026

### Dependency:
Refer to: A05052

### Description:
Displays the deviation of the measured DC link voltage from the average value.
The maximum deviation from the average value is displayed in r7031.

Dependency:
Refer to: r7030

### Description:
Sets the operating mode of the circulating current control.
The circulating current control ensures symmetrical distribution of the total currents to the individual converters.

Value:
0: Circulating current control de-activated
1: Circulating current control activated

Dependency:
Circulating current control is not possible for separate, offset motor winding systems (p7003 = 2).
### p7036[0...n] Par_circuit circulating current control proportional gain / Circ_I Kp

**VECTOR_G (Parallel)**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 0.00000 [ohm]
- **Max:** 200.00000 [ohm]
- **Factory setting:** 0.00000 [ohm]

**Description:**
Sets the proportional gain for the circulating current controller.
The parameter is pre-set to the cable resistance.

**Dependency:**
Refer to: p0115

- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Expert list:** 1

**Min Max Factory setting**
0.00000 [ohm] 200.00000 [ohm] 0.00000 [ohm]

### p7037[0...n] Par_circuit circulating current control integral time / I_circ Tn

**VECTOR_G (Parallel)**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 2.0
- **Max:** 1000.0
- **Factory setting:** 4.0

**Description:**
Sets the integral time of the circulating current controller.
The parameter is referred to the current controller sampling time (p0115[0]).

**Dependency:**
Refer to: p0115

- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Expert list:** 1

**Min Max Factory setting**
2.0 1000.0 4.0

### p7038[0...n] Par_circuit circulating current control limit / I_circ limit

**VECTOR_G (Parallel)**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** 1 [%]
- **Max:** 100 [%]
- **Factory setting:** 50 [%]

**Description:**
Sets the limit of the circulating current controller output values.
The parameter is, depending on the phase, referred to the valve lockout times (p1828, p1829, p1830).

### p7040[0...n] Par_circuit correction valve lockout time phase U / Comp t_lockout U

**VECTOR_G (Parallel)**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Modulation
- **Not for motor type:** -
- **Min:** -1000000.00 [µs]
- **Max:** 1000000.00 [µs]
- **Factory setting:** 0.00 [µs]

**Description:**
For the particular Motor Module, the correction time must be added to the valve lockout time to be compensated for phase U (p1828).
The corrective value is used to compensate variations/spread in the valve lockout times of Motor Modules for a parallel circuit configuration.

**Dependency:**
Refer to: p1828
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Scaling</th>
<th>Min Max Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7042[0...n]</td>
<td>Par_circuit correction valve lockout time phase V / Comp t_lockout V</td>
<td>Calculated: -</td>
<td>FloatingPoint32</td>
<td>PDS, p0120</td>
<td>-</td>
<td>100000.00 [µs] 0.00 [µs]</td>
<td></td>
</tr>
<tr>
<td>p7043[0...n]</td>
<td>Par_circuit correction valve lockout time phase W / Comp t_lockout W</td>
<td>Calculated: -</td>
<td>FloatingPoint32</td>
<td>PDS, p0120</td>
<td>-</td>
<td>100000.00 [µs] 0.00 [µs]</td>
<td></td>
</tr>
<tr>
<td>r7050[0...n]</td>
<td>Par_circuit circulating current phase U / Circ_I_phase U</td>
<td>Calculated: -</td>
<td>FloatingPoint32</td>
<td>PDS, p0120</td>
<td>6_5</td>
<td>- [A]</td>
<td></td>
</tr>
<tr>
<td>r7051[0...n]</td>
<td>Par_circuit circulating current phase V / Circ_I_phase V</td>
<td>Calculated: -</td>
<td>FloatingPoint32</td>
<td>PDS, p0120</td>
<td>6_5</td>
<td>- [A]</td>
<td></td>
</tr>
<tr>
<td>r7052[0...n]</td>
<td>Par_circuit circulating current phase W / Circ_I_phase W</td>
<td>Calculated: -</td>
<td>FloatingPoint32</td>
<td>PDS, p0120</td>
<td>6_5</td>
<td>- [A]</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7100[0...99]</td>
<td>Par_circuit ring buffer fault/alarm code / Fault/alarm code</td>
<td>B_INF (Parallel), VECTOR_G (Parallel)</td>
<td>Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module). Displays the fault/alarm code. The last fault case that occurred is documented in index 0. The parameter is reset to 0 at POWER ON.</td>
</tr>
<tr>
<td>r7101[0...99]</td>
<td>Par_circuit ring buffer data set number / Ring buffer Ds_No</td>
<td>B_INF (Parallel), VECTOR_G (Parallel)</td>
<td>Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module). p7101 &lt; 100: Displays the Power unit Data Set number (PDS). p7101 &gt;= 100: Displays the Voltage Sensing Module Data Set number (VSMDS)</td>
</tr>
<tr>
<td>r7102[0...99]</td>
<td>Par_circuit ring buffer fault/alarm received / F/A received</td>
<td>B_INF (Parallel), VECTOR_G (Parallel)</td>
<td>Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module). Displays the relative system runtime when the fault or alarm occurred. The last fault case that occurred is documented in index 0. The parameter is reset to 0 at POWER ON.</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

r7103[0...99]  Par_circuit ring buffer fault/alarm gone / F/A gone

- Can be changed: -
- Data type: Unsigned32
- P-Group: Displays, signals
- Min: -
- Not for motor type: -

Description:
Ring buffer for faults and alarms that have occurred from power units connected in parallel (Motor Module, Active Line Infeed, Voltage Sensing Module).
Displays the relative system runtime when the fault or alarm was withdrawn.

Dependency:
Refer to: r7100, r7101, r7102

Note:
The last fault case that occurred is documented in index 0.
The parameter is reset to 0 at POWER ON.

r7200[0...n]  Par_circuit power unit overload I2t / PU overload I2t

- Can be changed: -
- Data type: FloatingPoint32
- P-Group: Displays, signals
- Min: - [%]

Description:
Displays the overload of the particular power unit in a parallel circuit configuration calculated using the I2t function.
The maximum value of all power units is displayed in r0036.

r7201[0...n]  CO: Par_circuit power unit temperatures max. inverter / PU temp max inv

- Can be changed: -
- Data type: FloatingPoint32
- P-Group: Displays, signals
- Min: - [°C]

Description:
Displays the maximum inverter temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[0].

r7202[0...n]  Par_circuit power unit temperatures max. depletion layer / PU TempMaxDepLayer

- Can be changed: -
- Data type: FloatingPoint32
- P-Group: Displays, signals
- Min: - [°C]

Description:
Displays the maximum depletion layer temperature in the power unit for a parallel circuit configuration.
The maximum value of all power units is displayed in r0037[1].
**List of parameters**

### Parameter Description

**r7203[0...n]**

**Par_circuit power unit temperatures max. rectifier / PU temp max rect**

*Can be changed:* -  
*Calculated:* -  
*Data type:* FloatingPoint32  
*Dynamic index:* PDS, p0120  
*P-Group:* Displays, signals  
*Units group:* 21_1  
*Not for motor type:* -  
*Scaling:* p2006  

- **Min:** - °C  
- **Max:** - °C  

**Access level:** 3  
**Expert list:** 1  
**Factory setting:** - °C  

**Description:** Displays the maximum rectifier temperature in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[2].

### Parameter Description

**r7204[0...n]**

**Par_circuit power unit temperatures air intake / PU temp air intake**

*Can be changed:* -  
*Calculated:* -  
*Data type:* FloatingPoint32  
*Dynamic index:* PDS, p0120  
*P-Group:* Displays, signals  
*Units group:* 21_1  
*Not for motor type:* -  
*Scaling:* p2006  

- **Min:** - °C  
- **Max:** - °C  

**Access level:** 3  
**Expert list:** 1  
**Factory setting:** - °C  

**Description:** Displays the air intake temperature in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[3].

### Parameter Description

**r7205[0...n]**

**Par_circuit power unit temperatures electronics / PU temp electr**

*Can be changed:* -  
*Calculated:* -  
*Data type:* FloatingPoint32  
*Dynamic index:* PDS, p0120  
*P-Group:* Displays, signals  
*Units group:* 21_1  
*Not for motor type:* -  
*Scaling:* p2006  

- **Min:** - °C  
- **Max:** - °C  

**Access level:** 3  
**Expert list:** 1  
**Factory setting:** - °C  

**Description:** Displays the temperature of the electronics module in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[4].

### Parameter Description

**r7206[0...n]**

**Par_circuit power unit temperatures inverter 1 / PU temp inv 1**

*Can be changed:* -  
*Calculated:* -  
*Data type:* FloatingPoint32  
*Dynamic index:* PDS, p0120  
*P-Group:* Displays, signals  
*Units group:* 21_1  
*Not for motor type:* -  
*Scaling:* p2006  

- **Min:** - °C  
- **Max:** - °C  

**Access level:** 3  
**Expert list:** 1  
**Factory setting:** - °C  

**Description:** Displays the inverter temperature 1 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[5].

### Parameter Description

**r7207[0...n]**

**Par_circuit power unit temperatures inverter 2 / PU temp inv 2**

*Can be changed:* -  
*Calculated:* -  
*Data type:* FloatingPoint32  
*Dynamic index:* PDS, p0120  
*P-Group:* Displays, signals  
*Units group:* 21_1  
*Not for motor type:* -  
*Scaling:* p2006  

- **Min:** - °C  
- **Max:** - °C  

**Access level:** 3  
**Expert list:** 1  
**Factory setting:** - °C  

**Description:** Displays the inverter temperature 2 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[6].
### List of parameters

#### r7208[0...n] Par_circuit power unit temperatures inverter 3 / PU temp inv 3

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the inverter temperature 3 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[7].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>PDS, p0120</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Units group:</td>
<td>21_1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>p2006</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [°C]</td>
</tr>
</tbody>
</table>

#### r7209[0...n] Par_circuit power unit temperatures inverter 4 / PU temp inv 4

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the inverter temperature 4 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[8].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>PDS, p0120</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Units group:</td>
<td>21_1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>p2006</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [°C]</td>
</tr>
</tbody>
</table>

#### r7210[0...n] Par_circuit power unit temperatures inverter 5 / PU temp inv 5

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the inverter temperature 5 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[9].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>PDS, p0120</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Units group:</td>
<td>21_1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>p2006</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [°C]</td>
</tr>
</tbody>
</table>

#### r7211[0...n] Par_circuit power unit temperatures inverter 6 / PU temp inv 6

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the inverter temperature 6 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[10].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
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<tr>
<td>Calculated:</td>
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<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>PDS, p0120</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Units group:</td>
<td>21_1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>p2006</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [°C]</td>
</tr>
</tbody>
</table>

#### r7212[0...n] Par_circuit power unit temperatures inverter 1 / PU temp rect 1

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays rectifier temperature 1 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[11].</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
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<tr>
<td>Calculated:</td>
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<tr>
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<td>PDS, p0120</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Displays, signals</td>
</tr>
<tr>
<td>Units group:</td>
<td>21_1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>p2006</td>
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<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Max</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [°C]</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>r7213[0...n]</td>
<td>Displays rectifier temperature 2 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[12].</td>
</tr>
<tr>
<td>r7214[0...n]</td>
<td>Displays depletion layer temperature 1 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[13].</td>
</tr>
<tr>
<td>r7215[0...n]</td>
<td>Displays depletion layer temperature 2 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[14].</td>
</tr>
<tr>
<td>r7216[0...n]</td>
<td>Displays depletion layer temperature 3 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[15].</td>
</tr>
<tr>
<td>r7217[0...n]</td>
<td>Displays depletion layer temperature 4 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[16].</td>
</tr>
</tbody>
</table>
### r7218[0...n]
**Par_circuit power unit temperatures depletion layer 5 / PU temp DepLayer 5**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7218[0...n]</td>
<td>Displays depletion layer temperature 5 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[17].</td>
<td>- °C</td>
<td>- °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B_INF (Parallel), VECTOR_G (Parallel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min °C</td>
</tr>
</tbody>
</table>

### r7219[0...n]
**Par_circuit power unit temperatures depletion layer 6 / PU temp DepLayer 6**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7219[0...n]</td>
<td>Displays depletion layer temperature 6 in the power unit for a parallel circuit configuration. The maximum value of all power units is displayed in r0037[18].</td>
<td>- °C</td>
<td>- °C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B_INF (Parallel), VECTOR_G (Parallel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min °C</td>
</tr>
</tbody>
</table>

### r7220[0...n]
**CO: Par_circuit drive output current maximum / Drv I_outp max**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7220[0...n]</td>
<td>Displays the maximum output current of the power unit. The minimum value of all power units multiplied by the number of Motor Modules is displayed in r0067.</td>
<td>- [Arms]</td>
<td>- [Arms]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min [Arms]</td>
</tr>
</tbody>
</table>

### r7222[0...n]
**CO: Par_circuit absolute current actual value / I_act abs val**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7222[0...n]</td>
<td>Displays actual absolute current. The summed value of all power units is displayed in r0068.</td>
<td>- [A]</td>
<td>- [A]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min [Arms]</td>
</tr>
</tbody>
</table>

### r7223[0...n]
**CO: Par_circuit phase current actual value phase U / I_phase U act val**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Units</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7223[0...n]</td>
<td>Displays the measured actual value of phase U as peak value. The summed value of all power units is displayed in r0069[0].</td>
<td>- [A]</td>
<td>- [A]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
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<tr>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>
**List of parameters**

### r7224[0...n]
**CO: Par_circuit phase current actual value phase V / I_phase V act val**

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min:** - [A]  
**Max:** - [A]  
**Description:** Displays the measured actual value of phase V as peak value.  
The summed value of all power units is displayed in r0069[1].

### r7225[0...n]
**CO: Par_circuit phase current actual value phase W / I_phase W act val**

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min:** - [A]  
**Max:** - [A]  
**Description:** Displays the measured actual value of phase W as peak value.  
The summed value of all power units is displayed in r0069[2].

### r7226[0...n]
**CO: Par_circuit phase current actual value phase U offset / I_phase U offset**

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min:** - [A]  
**Max:** - [A]  
**Description:** Displays the measured offset of phase U as peak value.  
The summed value of all power units is displayed in r0069[3].

### r7227[0...n]
**CO: Par_circuit phase current actual value phase V offset / I_phase V offset**

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min:** - [A]  
**Max:** - [A]  
**Description:** Displays the measured offset of phase V as peak value.  
The summed value of all power units is displayed in r0069[4].

### r7228[0...n]
**CO: Par_circuit phase current actual value phase W offset / I_phase W offset**

<table>
<thead>
<tr>
<th>VECTOR_G (Parallel)</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min:** - [A]  
**Max:** - [A]  
**Description:** Displays the measured offset of phase W as peak value.  
The summed value of all power units is displayed in r0069[5].
### List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7229[0...n]</td>
<td>CO: Par_circuit phase current actual value sum U, V, W / I_phase sum UVW</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>- [A] - [A] - [A]</td>
</tr>
<tr>
<td>r7230[0...n]</td>
<td>CO: Par_circuit DC link voltage actual value / Vdc_act</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>- [V] - [V] - [V]</td>
</tr>
<tr>
<td>r7231[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase U / U_phase U act val</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>- [V] - [V] - [V]</td>
</tr>
<tr>
<td>r7232[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase V / U_phase V act val</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>- [V] - [V] - [V]</td>
</tr>
<tr>
<td>r7233[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase W / U_phase W act val</td>
<td>FloatingPoint32</td>
<td>3</td>
<td>- [V] - [V] - [V]</td>
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</tbody>
</table>
**List of parameters**

### r7240[0...n] Par_circuit gating unit status word 1 / Gating unit ZSW1

**VECTOR_G (Parallel)**

**Data type:** Unsigned16  
**P-Group:** Displays, signals  
**Not for motor type:** -  
**Min** -  
**Max** -  

**Description:** Displays status word 1 of the power unit.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fault time-critical</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Gating unit mode bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Pulse enable</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>5 V upper circuit breaker</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>5 V lower circuit breaker</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Gating unit mode bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Gating unit mode bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Brake state</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Brake diagnostics</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Armature short-circuit braking</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Gating unit state bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Gating unit state bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Gating unit state bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Alarm status bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Alarm status bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Diagnostics 24 V</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

### r7250[0...4] Par_circuit power unit rated power / PU P_rated

**B_INF (Parallel), VECTOR_G (Parallel)**

**Data type:** FloatingPoint32  
**P-Group:** Converter  
**Not for motor type:** -  
**Min** - [kW]  
**Max** - [kW]  

**Description:** Displays the rated power of the individual power units connected in parallel for various load duty cycles. The sum of the rated powers of all power units connected in parallel is displayed in r0206.

**Index:**

- [0] = Rated value  
- [1] = Load duty cycle with low overload  
- [2] = Load duty cycle with high overload  
- [3] = S1 cont duty cyc  
- [4] = S6 load duty cycle

**Dependency:** The value is displayed in [kW] or [hp]. Refer to: p0100, p0205

### r7251[0...4] Par_circuit power unit rated current / PU PI_rated

**B_INF (Parallel), VECTOR_G (Parallel)**

**Data type:** FloatingPoint32  
**P-Group:** Converter  
**Not for motor type:** -  
**Min** - [Arms]  
**Max** - [Arms]  

**Description:** Displays the rated current of the individual power units connected in parallel for various load duty cycles. The sum of the rated currents of all power units connected in parallel is displayed in r0207.

**Index:**

- [0] = Rated value  
- [1] = Load duty cycle with low overload  
- [2] = Load duty cycle with high overload
Parameters

List of parameters

- \[3\] = S1 cont duty cyc
- \[4\] = S6 load duty cycle

Dependency: Refer to: p0205

\begin{itemize}
  \item \textbf{r7252[0...4]} Par\_circuit maximum power unit current / PU I\_max
  \begin{itemize}
    \item B\_INF (Parallel), VECTOR\_G (Parallel)
    \item Can be changed: -
    \item Data type: FloatingPoint32
    \item P-Group: Converter
    \item Not for motor type: -
    \item Min: -
    \item - [Arms]
    \item Calculated: -
    \item Dynamic index: -
    \item Units group: -
    \item Scaling: -
    \item Expert list: 1
    \item Factory setting: - [Arms]
    \item Access level: 2
    \item Func. diagram: -
    \item Unit selection: -
  \end{itemize}

  Description: Displays the maximum output current of the individual power units connected in parallel. The sum of the maximum currents of all power units connected in parallel is displayed in r0209.

  Index:
  \begin{itemize}
    \item [0] = Rated value
    \item [1] = Load duty cycle with low overload
    \item [2] = Load duty cycle with high overload
    \item [3] = S1 cont duty cyc
    \item [4] = S6 load duty cycle
  \end{itemize}

  Dependency: Refer to: p0205
\end{itemize}

\begin{itemize}
  \item \textbf{r7758[0...19]} KHP Control Unit serial number / KHP CU ser\_no
  \begin{itemize}
    \item CU\_G130\_DP, CU\_G130\_PN, CU\_G150\_DP, CU\_G150\_PN
    \item Can be changed: -
    \item Data type: Unsigned8
    \item P-Group: -
    \item Not for motor type: -
    \item Min: -
    \item Calculated: -
    \item Dynamic index: -
    \item Units group: -
    \item Scaling: -
    \item Expert list: 1
    \item Factory setting: -
    \item Access level: 3
    \item Func. diagram: -
    \item Unit selection: -
  \end{itemize}

  Description: Displays the actual serial number of the Control Unit. The individual characters of the serial number are displayed in the ASCII code in the indices. For the commissioning software, the ASCII characters are displayed uncoded.

  Dependency: Refer to: p7765, p7766, p7767, p7768

  Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

  Note: KHP: Know-How Protection
\end{itemize}

\begin{itemize}
  \item \textbf{p7759[0...19]} KHP Control Unit reference serial number / KHP CU ref\_ser\_no
  \begin{itemize}
    \item CU\_G130\_DP, CU\_G130\_PN, CU\_G150\_DP, CU\_G150\_PN
    \item Can be changed: T
    \item Data type: Unsigned8
    \item P-Group: -
    \item Not for motor type: -
    \item Min: -
    \item Calculated: -
    \item Dynamic index: -
    \item Units group: -
    \item Scaling: -
    \item Expert list: 1
    \item Factory setting: -
    \item Access level: 3
    \item Func. diagram: -
    \item Unit selection: -
  \end{itemize}

  Description: Sets the reference serial number for the Control Unit. Using this parameter, if a Control Unit and/or a memory card is replaced at the end customer, the OEM can again adapt the project to the modified hardware.

  Dependency: Refer to: p7765, p7766, p7767, p7768

  Note: KHP: Know-How Protection
  \begin{itemize}
    \item - The OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".
    \item - SINAMICS only evaluates this parameter when powering up from the encrypted "Load into file system..." output or when powering up from the encrypted PS files. The evaluation is only made when know-how protection and memory card copy protection have been activated.
  \end{itemize}
\end{itemize}
### r7760

**Write protection/know-how protection status / Wr_prot/KHP stat**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Write protection active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Know-how protection active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Know-how protection temporarily withdrawn</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Know-how protection cannot be deactivated</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Memory card copy protection active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p7761, p7765, p7766, p7767, p7768

**Notice:** For bits 01 ... 04, the following applies:
- For SIMOTION D410-2 these bits have no significance (they are always 0).

**Note:**
- KHP: Know-How Protection
  - Re bit 00: Write protection can be activated/deactivated via p7761 on the Control Unit.
  - Re bit 01: The know-how protection can be activated by entering a password (p7766 ... p7768).
  - Re bit 02: If it has already been activated, know-how protection can be temporarily deactivated by entering the valid password in p7766. In this case, bit 1 = 0 and bit 2 = 1 offset.
  - Re bit 03: Know-how protection cannot be deactivated, as p7766 is not entered in the OEM exception list (only the factory setting is possible). This bit is only set if know-how protection is active (bit 1 = 1) and p7766 has not been entered in the OEM exception list.
  - Re bit 04: When know-how protection has been activated, the contents of the memory card (parameter and DCC data) can be additionally protected against being used with other memory cards. This bit is only set if know-how protection is active and p7765 = 1.

### p7761

**Write protection / Write protection**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting for activating/de-activating the write protection for adjustable parameters.

**Value:**
- 0: Deactivate write protection
- 1: Activate write protection

**Dependency:** Refer to: r7760

**Note:** While write protection is active, a download is prevented; however, it is still possible to restore the factory settings.

Examples of parameters, which for the SINAMICS drive family, are excluded from write protection:
### p7762
**Write protection multi-master fieldbus system access behavior / Fieldbus acc_behav**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7762</td>
<td>Sets the behavior for write protection when accessing via multi-master fieldbus systems (e.g. CAN, BACnet).</td>
<td>0: Write access independent of p7761</td>
<td>Refer to: r7760, p7761</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Write access dependent on p7761</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**

For SIMOTION D410-2, this parameter has no significance.

**Note:**

KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

---

### p7763
**KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7763</td>
<td>Sets the number of parameters for the OEM exception list (p7764[0...n]).</td>
<td>All objects</td>
<td>Refer to: r7764</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p7764[0...n], with n = p7763 - 1</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**

For SIMOTION D410-2, this parameter has no significance.

**Note:**

KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

---

### p7764[0...n]
**KHP OEM exception list / KHP OEM excep list**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7764[0...n]</td>
<td>OEM exception list (p7764[0...n]) for setting parameters that should be excluded from know-how protection.</td>
<td>B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G</td>
<td>Refer to: p7763</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p7764[0...n], with n = p7763 - 1</td>
<td></td>
</tr>
</tbody>
</table>

**Notice:**

For SIMOTION D410-2, this parameter has no significance.

**Note:**

KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.
Dependency: The number of indices depends on p7763.

Notice: For SIMOTION D410-2, this parameter has no significance.

Note: KHP: Know-How Protection

Even if know-how protection is set, parameters in this list can be read and written to.

**p7765**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>KHP memory card copy protection / KHP copy protect</td>
<td>Setting for activating/de-activating copy protection for the memory card. This means that the OEM can define whether the parameters and DCC data encrypted on the memory card should be protected before using on other memory cards.</td>
<td>0: Deactivating protection 1: Activating protection</td>
<td>Refer to: p7766, p7767, p7768</td>
</tr>
</tbody>
</table>

**p7766[0...29]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>KHP password input / KHP passw input</td>
<td>Sets the password for know-how protection. Example of a password: 123aBc = 49 50 51 97 66 99 dec (ASCII characters)</td>
<td>123aBc = 49 50 51 97 66 99 dec (ASCII characters)</td>
<td>Refer to: p7767, p7768</td>
</tr>
</tbody>
</table>

**Notice:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

When using the STARTER commissioning software, the password should be entered using the associated dialogs.

**Note:** KHP: Know-How Protection

When reading, p7766[0...29] = 42 dec (ASCII character = """") is displayed.

When using the STARTER commissioning software, when reading via the expert list, p7766[0...29] is displayed with **********.

The following rules apply when entering the password:
- Password entry must start with p7766[0].
- No gaps are permissible in the password.
- Entering a password is completed when writing to p7766[29] (p7766[29] = 0 for passwords less than 30 characters).
### List of parameters

#### p7767[0...29] KHP password new / KHP passw new

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependence</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
<td>When reading, p7767[0...29] = 42 dec (ASCII character = **) is displayed.</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p7768[0...29] KHP password confirmation / KHP passw confirm

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependence</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
<td>When reading, p7768[0...29] = 42 dec (ASCII character = **) is displayed.</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p7769[0...20] KHP memory card reference serial number / KHP mem ref ser_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Dependence</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td></td>
<td></td>
<td>- The OEM may only change this parameter for the use case &quot;Sending encrypted SINAMICS data&quot;.</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td>- SINAMICS only evaluates this parameter when powering up from the encrypted &quot;Load into file system...&quot; output or when powering up from the encrypted PS files. The evaluation is only made when know-how protection and memory card copy protection have been activated.</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p7770 NVRAM action / NVRAM action

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G</td>
<td>Can be changed: T</td>
<td>Sets the action to be executed for NVRAM data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>At the end of the action the value is automatically set to 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

**Value:**
- 0: Inactive
- 1: Load NVRAM data to parameters
- 2: Load parameters to NVRAM
- 3: Reset

**Notice:**
- After action p7770 = 1 no more pulses may be enabled.
- After action p7770 = 2, it is essential that parameters are backed up (p0977 = 1) and that a warm restart is then performed (p0009 = 30, p0976 = 2, 3). This will apply the values written.

**Note:**
- If value = 1:
  - This action loads the NVRAM data to the parameters.
- If value = 2:
  - This action loads the parameters to the NVRAM.
- If value = 3:
  - This action sets parameters p7771 ... p7774 to the factory setting.
  - It is recommended to avoid placing unnecessary load on the subsequent upload/download operation.

**Description:**
Setting to backup/import/delete NVRAM data.

NVRAM data are non-volatile data in the device (e.g. fault buffer).

For NVRAM data actions, the following data are excluded:
- Crash diagnostics
- CU operating hours counter
- CU temperature
- Safety logbook

**p7775**
**NVRAM data backup/import/delete / NVRAM backup**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Inactive</td>
</tr>
<tr>
<td>1</td>
<td>NVRAM data backup to memory card</td>
</tr>
<tr>
<td>2</td>
<td>Import NVRAM data from the memory card</td>
</tr>
<tr>
<td>3</td>
<td>Delete NVRAM data in the device</td>
</tr>
<tr>
<td>10</td>
<td>Error when clearing</td>
</tr>
<tr>
<td>11</td>
<td>Error when backing up, memory card not available</td>
</tr>
<tr>
<td>12</td>
<td>Error when backing up, insufficient memory space</td>
</tr>
<tr>
<td>13</td>
<td>Error when backing up</td>
</tr>
<tr>
<td>14</td>
<td>Error when importing, memory card not available</td>
</tr>
<tr>
<td>15</td>
<td>Error when importing, checksum error</td>
</tr>
<tr>
<td>16</td>
<td>Error when importing, no NVRAM data available</td>
</tr>
<tr>
<td>17</td>
<td>Error when importing</td>
</tr>
</tbody>
</table>

**Notice:**
- Re value = 2, 3:
  - These actions are only possible when pulses are inhibited.

**Note:**
- After the action has been successfully completed, the parameter is automatically set to zero.
- The actions importing and deleting NVRAM data immediately initiate a warm restart.
- If the procedure was not successfully completed, then an appropriate fault value is displayed (p7775 >= 10).

**Description:**
Setting of the tolerance window for the sign of life monitoring for communication to the power unit.

**p7788**
**Power unit sign-of-life monitoring tolerance window / PU SoL monit tol**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power unit sign-of-life monitoring tolerance window</td>
</tr>
</tbody>
</table>

**Notice:**
- These actions are only possible when pulses are inhibited.

**Note:**
- If the procedure was not successfully completed, an inappropriate fault value is displayed (p7775 >= 10).
**Parameters**

**List of parameters**

**Dependency:** Refer to: A30853

**Note:**
An active window is generated by means of DRIVE-CLiQ telegrams.
If more than one sign-of-life error appears in the window, then A30853 is output.
The lower the value in p7788, the greater the monitoring tolerance.

**p7789** Power unit sign-of-life monitoring fault threshold / PU SoL monit FThr

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, VECTOR_G</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Converter</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1000</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the number of consecutive sign-of-life errors that are tolerated for communication to the power unit.

**Dependency:** Refer to: F30008

**Note:** F30008 is output in the case of a fault.
The higher the value in the parameter, the higher the monitoring tolerance.

**p7820** DRIVE-CLiQ component component number / DLQ comp_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the component number of the DRIVE-CLiQ component whose parameters are to be accessed.

**Dependency:** Refer to: p7821, p7822, r7823

**p7821** DRIVE-CLiQ component parameter number / DLQ para_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the parameter number to access a parameter of a DRIVE-CLiQ component.

**Dependency:** Refer to: p7820, p7822, r7823

**p7822** DRIVE-CLiQ component parameter index / DLQ para_index

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the parameter index to access a parameter of a DRIVE-CLiQ component.

**Dependency:** Refer to: p7820, p7821, r7823
### r7823
**DRIVE-CLiQ component read parameter value / Read DLQ value**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>displays the parameter value read from the DRIVE-CLiQ component.</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dependency:</th>
<th>Refer to: p7820, p7821, p7822</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Index:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[0] = Reference firmware version</td>
<td>Displays the firmware and EPROM versions of the DRIVE-CLiQ component selected using p7828[1].</td>
</tr>
<tr>
<td></td>
<td>[1] = Actual firmware version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = EPROM0 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3] = EPROM1 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[4] = EPROM2 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[5] = EPROM3 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[6] = EPROM4 version</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dependency:</th>
<th>Refer to: p7828</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Note:</th>
<th>Reference firmware version: Version on the memory card/device memory.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current firmware version: Actual version of the DRIVE-CLiQ component.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EPROM version: Current EPROM version of the DRIVE-CLiQ component.</td>
<td></td>
</tr>
</tbody>
</table>

### r7825[0...6]
**DRIVE-CLiQ component versions / DLQ version**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Displays the firmware and EPROM versions of the DRIVE-CLiQ component selected using p7828[1].</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Index:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>[0] = Reference firmware version</td>
<td>Displays the firmware and EPROM versions of the DRIVE-CLiQ component selected using p7828[1].</td>
</tr>
<tr>
<td></td>
<td>[1] = Actual firmware version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = EPROM0 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3] = EPROM1 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[4] = EPROM2 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[5] = EPROM3 version</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[6] = EPROM4 version</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Dependency:</th>
<th>Refer to: p7828</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Note:</th>
<th>Reference firmware version: Version on the memory card/device memory.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current firmware version: Actual version of the DRIVE-CLiQ component.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EPROM version: Current EPROM version of the DRIVE-CLiQ component.</td>
<td></td>
</tr>
</tbody>
</table>

### p7826
**Firmware update automatic / FW update auto**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the behavior for the automatic firmware update of the DRIVE-CLiQ components.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value:</th>
<th>Notice:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0: De-activated</td>
<td>If this parameter is changed, it only becomes effective the next time that the drive system boots.</td>
</tr>
<tr>
<td></td>
<td>1: Upgrade and downgrade</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Upgrade</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Notice:</th>
<th>After the update has been completed, it is necessary to carry out a new POWER ON (power-down/power-up) for the components involved.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The firmware is automatically updated when the system boots. The boot can take several minutes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The firmware update procedure is displayed as follows:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Control Unit (LED RDY):</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashes yellow with 0.5 Hz --&gt; firmware is being updated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing yellow with 2 Hz --&gt; POWER ON is required for the components involved.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Components involved:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing red/green with 0.5 Hz --&gt; firmware is being updated.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flashing red/green with 2 Hz --&gt; POWER ON of the components is required.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Only components from firmware version 2.5 support the red/green flashing at 2 Hz.</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r7827

**Firmware update progress display / FW update progress**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Displays the progress when updating the firmware of the DRIVE-CLiQ components.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p7828[0...1]

**Firmware download component number / FW downl comp_no**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Sets the component number for the required DRIVE-CLiQ component.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>399</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p7829

**Activate firmware download / FW download act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>999</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0121, p0141, p0151, p7829

**Note:** For p7828[0] = 399, the firmware for all of the existing components is downloaded.

The firmware download is started with p7829 = 1.

**Note:**

- 1: Activate download.
- -1: activate the download and carry out a reset.
- 0: Download successfully completed.
- > 1: Fault code
  - 011: DRIVE-CLiQ component has detected a checksum error.
  - 015: The selected DRIVE-CLiQ components did not accept the contents of the firmware file.
  - 018: Firmware version is too old and is not accepted by the component.
  - 019: Firmware version is not suitable for the hardware release of the component.
  - 101: After several communication attempts, no response from the DRIVE-CLiQ component.
  - 140: Firmware file for the DRIVE-CLiQ component not available on the memory card/device memory.
  - 143: Component has not changed to the mode for firmware download. It was not possible to delete the existing firmware.
  - 144: When checking the firmware that was downloaded (checksum), the component detected a fault. It is possible that the file on the memory card/device memory is defective.
  - 145: Checking the loaded firmware (checksum) was not completed by the component in the appropriate time.
  - 156: Component with the specified component number is not available.
### p7830
**Diagnostics telegram selection / Diag telegram**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>Dynamic index:</strong></td>
<td>-</td>
<td><strong>Func. diagram:</strong></td>
<td>-</td>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
<td><strong>Factory setting</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Selects a telegram whose contents should be shown in p7831 ... p7836.

**Value:**
- 0: Reserved
- 1: First cyclic receive telegram sensor 1
- 2: First cyclic receive telegram sensor 2
- 3: First cyclic receive telegram sensor 3

**Dependency:**
Refer to: r7831, r7832, r7833, r7834, r7835, r7836

### r7831[0...15]
**Telegram diagnostics signals / Tel diag signals**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>Dynamic index:</strong></td>
<td>-</td>
<td><strong>Func. diagram:</strong></td>
<td>-</td>
<td><strong>Units group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td><strong>Scaling:</strong></td>
<td>-</td>
<td><strong>Expert list:</strong></td>
<td>1</td>
<td><strong>Factory setting</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>15157</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the signals contained in the selected telegram (p7830).

**Value:**
- 0: UNUSED
- 1: UNKNOWN
- 102: SAPAR_ID_DSA_ALARM
- 110: SAPAR_ALARMBITS_FLOAT_0
- 111: SAPAR_ALARMBITS_FLOAT_1
- 112: SAPAR_ALARMBITS_FLOAT_2
- 113: SAPAR_ALARMBITS_FLOAT_3
- 114: SAPAR_ALARMBITS_FLOAT_4
- 115: SAPAR_ALARMBITS_FLOAT_5
- 10500: ENC_ID_TIME_PRETRIGGER
- 10501: ENC_ID_TIME_SEND_TELEG_1
- 10502: ENC_ID_TIME_CYCLE_FINISHED
- 10503: ENC_ID_TIME_DELTA_FUNMAN
- 10504: ENC_ID_SUBTRACE_CALCTIMES
- 10505: ENC_ID_SYNO_PERIOD
- 10516: ENC_ID_ADC_TRACK_A
- 10517: ENC_ID_ADC_TRACK_B
- 10518: ENC_ID_ADC_TRACK_C
- 10519: ENC_ID_ADC_TRACK_D
- 10520: ENC_ID_ADC_TRACK_A_SAFETY
- 10521: ENC_ID_ADC_TRACK_B_SAFETY
- 10523: ENC_ID_ADC_TEMP_1
- 10526: ENC_ID_ADC_TRACK_R
- 10532: ENC_ID_TRACK_AB_X
- 10533: ENC_ID_TRACK_AB_Y
- 10534: ENC_ID_OFFSET_CORR_AB_X
- 10535: ENC_ID_OFFSET_CORR_AB_Y
- 10536: ENC_ID_AB_ABS_VALUE
- 10537: ENC_ID_TRACK_CD_X
- 10538: ENC_ID_TRACK_CD_Y
Parameters

List of parameters

10539: ENC_ID_TRACK_CD_ABS
10542: ENC_ID_AB_RAND_X
10543: ENC_ID_AB_RAND_Y
10544: ENC_ID_AB_RAND_ABS_VALUE
10545: ENC_ID_SUBTRACE_ABS_ARRAY
10546: ENC_ID_PROC_OFFSET_0
10547: ENC_ID_PROC_OFFSET_4
10564: ENC_SELFTEMP_ACT
10565: ENC_ID_MOTOR_TEMP_TOP
10566: ENC_ID_MOTOR_TEMP_1
10580: ENC_ID_RESISTANCE_1
10590: ENC_ID_ANA_CHAN_A
10591: ENC_ID_ANA_CHAN_B
10592: ENC_ID_ANA_CHAN_X
10593: ENC_ID_ANA_CHAN_Y
10596: ENC_ID_AB_ANGLE
10597: ENC_ID_CD_ANGLE
10598: ENC_ID_MECH_ANGLE_HI
10599: ENC_ID_RM_POS_PHI_COMMU
10600: ENC_ID_PHI_COMMU
10612: ENC_ID_DIFF_CD_INC
10613: ENC_ID_RM_POS_PHI_COMMU RFG
10628: ENC_ID_MECH_ANGLE
10629: ENC_ID_MECH_RM_POS
10644: ENC_ID_INIT_VECTOR
10645: FEAT_INIT_VECTOR
10660: ENC_ID_SENSOR_STATE
10661: ENC_ID_BASIC_SYSTEM
10662: ENC_ID_REFMARK_STATUS
10663: ENC_ID_DSA_STATUS1_SENSOR
10664: ENC_ID_DSA_RMSTAT_HANDSHAKE
10665: ENC_ID_DSA_CONTROL1_SENSOR
10667: ENC_ID_SAFETY
10676: ENC_ID_COUNTCORR_SAW_VALUE
10677: ENC_ID_COUNTCORR_ABS_VALUE
10678: ENC_ID_SAWTOOTH_CORR
10692: ENC_ID_RESISTANCE_CALIB_INSTANT
10693: ENC_ID_SERPROT_POS
10724: ENC_ID_ACT_FUNMAN_FUNCTION
10725: ENC_ID_SAFETY_COUNTER_CRC
10740: ENC_ID_POS_ABSOLUTE
10741: ENC_ID_POS_REFMARK
10742: ENC_ID_SAWTOOTH
10743: ENC_ID_SAFETY_PULSE_COUNTER
10756: ENC_ID_DSA_ACTUAL_SPEED
10757: ENC_ID_SPEED_DEV_ABS
10772: ENC_ID_DSA_POS_XIST1
10788: ENC_ID_AB_CROSS_CORR
10789: ENC_ID_AB_GAIN_Y_CORR
10790: ENC_ID_AB_PEAK_CORR
11825: ENC_ID_RES_TRANSITION_RATIO
11826: ENC_ID_RES_PHASE_SHIFT
15150: ENC_ID_SPINDLE_S1_RAW
15151: ENC_ID_SPINDLE_S4_RAW
15152: ENC_ID_SPINDLE_S5_RAW
15155: ENC_ID_SPINDLE_S4_CAL
15156: ENC_ID_SPINDLE_S4_CAL
15157: ENC_ID_SPINDLE_S5_CAL
**List of parameters**

**r7832[0...15] Telegram diagnostics numerical format / tel diag format**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the original numerical format of the signals contained in the telegram.
The associated signal number is represented in the appropriate index of r7831.

**Value:**
-1: Unknown
0: Boolean
1: Signed 1 byte
2: Signed 2 byte
3: Signed 4 byte
4: Signed 8 byte
5: Unsigned 1 byte
6: Unsigned 2 byte
7: Unsigned 4 byte
8: Unsigned 8 byte
9: Float 4 byte
10: Double 8 byte
11: mm dd yy HH MM SS MS DOW
12: ASCII string
13: SINUMERIK frame type
14: SINUMERIK axis type

**Dependency:**
Refer to: r7831

**r7833[0...15] Telegram diagnostics unsigned / Tel diag unsigned**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Parameter to display a DSA signal in the unsigned-integer format.
The associated signal number is represented at the appropriate index in r7831.

**r7834[0...15] Telegram diagnostics signed / Tel diag signed**

<table>
<thead>
<tr>
<th>ENC, VECTOR_G</th>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type:</td>
<td>Integer32</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Parameter to display a DSA signal in the signed-integer format.
The associated signal number is represented at the appropriate index in r7831.
### r7835[0...15] Telegram diagnostics real / Tel diag real

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC, VECTOR_G</td>
<td>Parameter to display a DSA signal in the float format. The associated signal number is represented at the appropriate index in r7831.</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min:** -  
**Max:** -  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Access level:** 4  
**Func. diagram:** -

### r7836[0...15] Telegram diagnostics unit / Tel diag unit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
</table>
| ENC, VECTOR_G | Displays the units of a DSA signal. The associated signal number is represented at the appropriate index in r7831. | -1: Unknown  
0: None  
1: Millimeter or degrees  
2: Millimeter  
3: Degrees  
4: mm/min or RPM  
5: Millimeter / min  
6: Revolutions / min  
7: m/sec² or U/sec²  
8: m/sec²  
9: U/sec²  
10: m/sec³ or U/sec³  
11: m/sec³  
12: U/sec³  
13: sec  
14: 16.667 / sec  
15: mm/revolution  
16: ACX_UNIT_COMPENSATION_CORR  
18: Newton  
19: Kilogram  
20: Kilogram meter²  
21: Percent  
22: Hertz  
23: Volt peak-to-peak  
24: Amps peak-to-peak  
25: Degrees Celsius  
26: Degrees  
28: Millimeter or degrees  
29: Meters / minute  
30: Meters / second  
31: ohm  
32: Millihenry  
33: Newton meter  
34: Newton meter/Ampere  
35: Volt/Ampere  
36: Newton meter second / rad  
38: 31.25 microseconds  
39: Microseconds  
40: Milliseconds | -1  
147 | - | - | - |
Parameters

List of parameters

42: Kilowatt
43: Micro amps peak-to-peak
44: Volt seconds
45: Microvolt seconds
46: Micro newton meters
47: Amps / volt seconds
48: Per mille
49: Hertz / second
53: Micrometer or millidegrees
54: Micrometer
55: Millidegrees
59: Nanometer
61: Newton/Amps
62: Volt seconds/meter
63: Newton seconds/meter
64: Micronewton
65: Liters / minute
66: Bar
67: Cubic centimeters
68: Millimeter / volt minute
69: Newton/Volt
80: Millivolts peak-to-peak
81: Volt rms
82: Millivolts rms
83: Amps rms
84: Micro amps rms
85: Micrometers / revolution
90: Tenths of a second
91: Hundredths of a second
92: 10 microseconds
93: Pulses
94: 256 pulses
95: Tenths of a pulse
96: Revolutions
97: 100 revolutions / minute
98: 10 revolutions / minute
99: 0.1 revolutions / minute
100: Thousandth revolution / minute
101: Pulses / second
102: 100 pulses / second
103: 10 revolutions / (minute x seconds)
104: 10000 pulses/second*2
105: 0.1 Hertz
106: 0.01 Hertz
107: 0.1 / seconds
108: Factor 0.1
109: Factor 0.01
110: Factor 0.001
111: Factor 0.0001
112: 0.1 Volt peak-to-peak
113: 0.1 Volt peak-to-peak
114: 0.1 amps peak-to-peak
115: Watt
116: 100 Watt
117: 10 Watt
118: 0.01 percent
119: 1/second*3
120: 0.01 percent/millisecond
121: Pulses / revolution
122: Microfarads
123: Milliohm
124: 0.01 Newton meter
125: Kilogram millimeter*2
126: Rad / (seconds newton meter)
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>127: Henry</td>
<td>Displays the actual serial number of the memory card. The individual characters of the serial number are displayed in the ASCII code in the indices.</td>
</tr>
<tr>
<td>128: Kelvin</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>129: Hours</td>
<td>Data type: Unsigned8 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>130: KiloHertz</td>
<td>P-Group: - Units group: - Unit selection: -</td>
</tr>
<tr>
<td>131: MilliAmperes peak-to-peak</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>132: Millifarads</td>
<td>Min Max Factory setting</td>
</tr>
<tr>
<td>133: Meter</td>
<td>- -</td>
</tr>
<tr>
<td>135: Kilowatt hours</td>
<td>Serial number = 111923E</td>
</tr>
<tr>
<td>136: Percent</td>
<td>Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.</td>
</tr>
<tr>
<td>137: Amps / Volt</td>
<td>Note: Example: displaying the serial number for a memory card:</td>
</tr>
<tr>
<td>138: Volt</td>
<td>r7843[0...20] Memory card serial number / Mem_card ser.no</td>
</tr>
<tr>
<td>139: Millivolts</td>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
</tr>
<tr>
<td>140: Microvolts</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>141: Amps</td>
<td>Data type: Unsigned8 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>142: MilliAmperes</td>
<td>P-Group: - Units group: - Unit selection: -</td>
</tr>
<tr>
<td>143: Micro amps</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>144: MilliAmperes rms</td>
<td>Min Max Factory setting</td>
</tr>
<tr>
<td>145: Millimeter</td>
<td>- -</td>
</tr>
<tr>
<td>146: Nanometer</td>
<td>Serial number = 111923E</td>
</tr>
<tr>
<td>147: Joules</td>
<td>Description: Displays the actual serial number of the memory card.</td>
</tr>
</tbody>
</table>

#### r7843[0...20] Memory card serial number / Mem_card ser.no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: - Units group: - Unit selection: -</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td>Min Max Factory setting</td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td>- -</td>
</tr>
</tbody>
</table>

#### r7844[0...2] Memory card/device memory firmware version / Mem_crd/dev_mem FW

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: - Units group: - Unit selection: -</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td>Min Max Factory setting</td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td>- -</td>
</tr>
</tbody>
</table>

### Description:
Displays the version of the firmware stored on the memory card/device memory.
Index:

- [0] = Internal
- [1] = External
- [2] = Parameter backup

Note:

Re index 0:
Displays the internal firmware version (e.g. 04402315).
This firmware version is the version of the memory card/device memory and not the CU firmware (r0018), however, normally they have the same versions.

Re index 1:
Displays the external firmware version (e.g. 04040000 -> 4.4).
For automation systems with SINAMICS Integrated this is the runtime version of the automation system.

Re index 2:
Displays the internal CU firmware version (r0018) of the parameter backup.
With this CU firmware version, the parameter backup was saved, which was used when powering up.

**r7850[0...23]**

### Drive object operational/not operational / DO ready for oper

| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN |
| Can be changed: - | Calculated: - | Access level: 4 |
| Data type: Integer16 | Dynamic index: - | Func. diagram: - |
| P-Group: - | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
|-32786 | 32767 | - |

Description:
Displays whether, for an activated drive object, all activated topology components are available or not (or whether these can be addressed).
0: Drive object not ready for operation
1: Drive object ready for operation

**p7852**

### Number of indices for r7853 / Qty indices r7853

| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN |
| Can be changed: U, T | Calculated: - | Access level: 4 |
| Data type: Unsigned16 | Dynamic index: - | Func. diagram: - |
| P-Group: - | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 1 | 200 | 1 |

Description:
Displays the number of indices for r7853[0...n].
This corresponds to the number of DRIVE-CLiQ components that are in the target topology.

Dependency:
Refer to: r7853

Note:
The values are valid if all available Control Units adopt the "Initialization finished" state (r3988 = 800) following power-up.

**r7853[0...n]**

### Component available/not available / Comp present

| CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN |
| Can be changed: - | Calculated: - | Access level: 4 |
| Data type: Unsigned16 | Dynamic index: p7852 | Func. diagram: - |
| P-Group: - | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0000 hex | FFFF hex | - |

Description:
Displays the component and whether this component is currently present.
High byte: Component number
Low byte: 0/1 (not available/available)

Dependency:
Refer to: p7852

Note:
The values are valid if all available Control Units adopt the "Initialization finished" state (r3988 = 800) following power-up.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p7857</strong></td>
<td>Sub-boot mode / Sub-boot mode</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Exp. list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode for the sub-boot.

**Value:**
- 0: Sub-boot manual
- 1: Sub-boot automatic

**Note:**
For p7857 = 0 (manual sub-boot) the following applies:
The parameter should be set to 1 to start the sub-boot.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Component number global / Comp_nr global</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Exp. list: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-32786</td>
<td>32767</td>
</tr>
</tbody>
</table>

**Description:**
Sets the global and unique component number in a drive system with several Control Units.

Each index of the parameter corresponds to a possible local component number on the corresponding Control Unit.
The indices are allocated to the global component numbers as follows:
- p7859[0]: Not used
- p7859[1]: Sets the global component number for the local component number 1
- p7859[2]: Sets the global component number for the local component number 2
- p7859[199]: Sets the global component number for the local component number 199

**Notice:**
This parameter is preferably set via suitable commissioning software (e.g. UpdateAgent, STARTER, SCOUT).
Changing the parameter via the AOP (Advanced Operator Panel) or BOP (Basic Operator Panel) can destroy a valid unique setting.

**Note:**
The parameter is not influenced by setting the factory setting.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Status/configuration changes global / Changes global</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Exp. list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays status and configuration changes of all of the drive objects in the complete unit.
When changing the status or the configuration of the Control Unit or a drive object, the value of this parameter is incremented.

**Dependency:**
Refer to: r7868, r7869, r7870
### r7868[0...24] Configuration changes drive object reference / Config_chng DO ref

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:**
Reference to the drive objects whose configuration has changed.

**Index:**
- Index 0: When changing one of the following indices, then the value in this index is increased.
- Index 1...n: The drive object with object number in p0101[n-1] has changed its configuration.

**Example:**
r7868[3] was incremented since the last time it was read.

--> the configuration of the drive object with object number in p0101[2] was changed.

**Dependency:**
Refer to: p0101, r7867, r7871

### r7869[0...24] Status changes drive object reference / Status_chng DO ref

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:**
Reference to the drive objects whose status has changed.

**Index:**
- Index 0: When changing one of the following indices, then the value in this index is increased.
- Index 1...n: The drive object with object number in p0101[n-1] has changed its status.
Example:

r7868[3] was incremented since the last time it was read.

--> the status of the drive object with object number in p0101[2] was changed.

Index:

[0] = Sum of the following indices
[1] = Object number in p0101[0]
[17] = Object number in p0101[16]
[18] = Object number in p0101[17]
[19] = Object number in p0101[18]
[22] = Object number in p0101[21]
[23] = Object number in p0101[22]
[24] = Object number in p0101[23]

Dependency:

Refer to: p0101, r7867, r7872

**r7870[0...7]**

**Configuration changes global / Config_chng global**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Displays the configuration changes of all of the drive objects in the complete unit.</td>
</tr>
</tbody>
</table>

**Index:**

[0] = Sum of the following indices

[1] = r7871[0] of a drive object

[2] = p0101 or r0102

[3] = PROFIBUS configuration (p0978)

[4] = DRIVE-CLiQ actual topology (r9900 or r9901)

[5] = DRIVE-CLiQ target topology (r9902 or r9903)

[6] = DRIVE-CLiQ ports (p0109)

[7] = OA applications

**Dependency:**

Refer to: r7867, r7871

**Note:**

When changing one of the following indices, then the value in this index is incremented.

Index 1:

Drive object configuration. When changing r7871[0] on a drive object, the value in this index is incremented.

Index 2:

Drive object, configuration unit. When changing either p0101 or r0102, the value in this index is incremented.

Index 3:

PROFIBUS configuration unit. When changing p0978, the value in this index is incremented.

Index 4:

DRIVE-CLiQ actual topology. When changing either r9900 or r9901, the value in this index is incremented.
**Index 5:**
DRIVE-CLiQ target topology. When changing either p9902 or p9903, the value in this index is incremented.

**Index 6:**
DRIVE-CLiQ ports. When changing p0109, the value in this index is incremented.

**Index 7:**
OA applications. When changing OA applications, the value in this index is incremented.

<table>
<thead>
<tr>
<th>r7871[0...10]</th>
<th>Configuration changes drive object / Config_chng DO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF</strong></td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>- Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>- Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the configuration changes on the drive object.</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Sum of the following indices</td>
</tr>
<tr>
<td></td>
<td>[1] = p0010, p0107 or p0108</td>
</tr>
<tr>
<td></td>
<td>[2] = Drive object name (p0199)</td>
</tr>
<tr>
<td></td>
<td>[3] = Structure-relevant parameters (e.g. p0180)</td>
</tr>
<tr>
<td></td>
<td>[4] = BICO interconnections</td>
</tr>
<tr>
<td></td>
<td>[5] = Activate/de-activate drive object</td>
</tr>
<tr>
<td></td>
<td>[6] = Data backup required</td>
</tr>
<tr>
<td></td>
<td>[7] = Activate/de-activate component</td>
</tr>
<tr>
<td></td>
<td>[8] = Reference or changeover parameters (e.g. p2000)</td>
</tr>
<tr>
<td></td>
<td>[9] = Parameter count through Drive Control Chart (DCC)</td>
</tr>
<tr>
<td></td>
<td>[10] = p0107 or p0108</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r7868, r7870</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Re index 0:</td>
</tr>
<tr>
<td></td>
<td>When changing one of the following indices, then the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 1:</td>
</tr>
<tr>
<td></td>
<td>Drive object commissioning: When changing p0010, p0107 or p0108, the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 2:</td>
</tr>
<tr>
<td></td>
<td>Drive object name. When changing p0199, the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 3:</td>
</tr>
<tr>
<td></td>
<td>Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 4:</td>
</tr>
<tr>
<td></td>
<td>Drive object BICO interconnections. When changing r3977, the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 5:</td>
</tr>
<tr>
<td></td>
<td>Drive object activity: When changing p0105, the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 6:</td>
</tr>
<tr>
<td></td>
<td>Drive object, data save.</td>
</tr>
<tr>
<td></td>
<td>0: There are no parameter changes to save.</td>
</tr>
<tr>
<td></td>
<td>1: There are parameter changes to save.</td>
</tr>
<tr>
<td></td>
<td>Re index 7:</td>
</tr>
<tr>
<td></td>
<td>Drive object component activity: When changing either p0125 or p0145, the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 8:</td>
</tr>
<tr>
<td></td>
<td>Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 9:</td>
</tr>
<tr>
<td></td>
<td>Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.</td>
</tr>
<tr>
<td></td>
<td>Re index 10:</td>
</tr>
<tr>
<td></td>
<td>Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>r7871[0...10]</th>
<th>Configuration changes drive object / Config_chng DO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong></td>
<td>Can be changed: -  Calculated: -  Access level: 4</td>
</tr>
<tr>
<td><strong>CU_G130_PN,</strong></td>
<td>Data type: Unsigned32  Dynamic index: -  Func. diagram: -</td>
</tr>
<tr>
<td><strong>CU_G150_DP,</strong></td>
<td>P-Group: -  Units group: -  Unit selection: -</td>
</tr>
<tr>
<td><strong>CU_G150_PN</strong></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
</tbody>
</table>

**Description:** Displays the configuration changes on the drive object.

**Index:**
- [0] = Sum of the following indices
- [1] = p0107 or p0108
- [2] = Drive object name (p0199)
- [3] = Structure-relevant parameters (e.g. p0180)
- [4] = BICO interconnections
- [5] = Activate/de-activate drive object
- [6] = Data backup required
- [7] = Reserved
- [8] = Reference or changeover parameters (e.g. p2000)
- [9] = Parameter count through Drive Control Chart (DCC)
- [10] = p0107 or p0108

**Dependency:**
Refer to: r7868, r7870

**Note:**
- When changing one of the following indices, then the value in this index is incremented.
- Re index 0:
- Re index 1:
  - Drive object commissioning: When changing either p0107 or p0108, the value in this index is incremented.
- Re index 2:
  - Drive object name. When changing p0199, the value in this index is incremented.
- Re index 3:
  - Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.
- Re index 4:
  - Drive object BICO interconnections. When changing r3977, the value in this index is incremented.
- Re index 5:
  - Drive object activity: When changing p0105, the value in this index is incremented.
- Re index 6:
  - Drive object, data save.
- 0: There are no parameter changes to save.
- 1: There are parameter changes to save.
- Re index 8:
  - Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.
- Re index 9:
  - Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.
- Re index 10:
  - Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.

<table>
<thead>
<tr>
<th>r7871[0...15]</th>
<th>Configuration changes drive object / Config_chng DO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ENC</strong></td>
<td>Can be changed: -  Calculated: -  Access level: 4</td>
</tr>
<tr>
<td>Data type: Unsigned32  Dynamic index: -  Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -  Units group: -  Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
</tbody>
</table>

**Description:** Displays the configuration changes on the drive object.
Index: 
[0] = Sum of the following indices
[1] = p0010, p0107 or p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/de-activate drive object
[6] = Data backup required
[7] = Activate/de-activate component
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107 or p0108
[11] = p0530 or p0531
[12] = Reserved
[13] = Reserved
[14] = Reserved
[15] = Enc type (p0400)

Dependency:
Refer to: r7868, r7870

Note:
When changing one of the following indices, then the value in this index is incremented.
Re index 0:
Re index 1:
Drive object configuration. When changing p0010, p0107 or p0108, the value in this index is incremented.
Re index 2:
Drive object name. When changing p0199, the value in this index is incremented.
Re index 3:
Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.
Re index 4:
Drive object BICO interconnections. When changing r3977, the value in this index is incremented.
Re index 6:
Drive object, data save.
0: There are no parameter changes to save.
1: There are parameter changes to save.
Re index 8:
Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304 ...), the value in this index is incremented.
Re index 9:
Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.
Re index 15:
Encoder configuration. When changing p0400, the value in this index is incremented.

r7871[0...10] Configuration changes drive object / Config_chng DO

HUB, TB30, TM150, TM31

Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dynamic index: - Func. diagram: -
P-Group: - Units group: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- -

Description: Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107 or p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/de-activate drive object
[6] = Data backup required
[7] = Reserved
Parameters
List of parameters

[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107 or p0108

Dependency:
Refer to: r7868, r7870

Note:
Re index 0:
When changing one of the following indices, then the value in this index is incremented.
Re index 1:
Drive object commissioning: When changing p0010, p0107 or p0108, the value in this index is incremented.
Re index 2:
Drive object name. When changing p0199, the value in this index is incremented.
Re index 3:
Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.
Re index 4:
Drive object BICO interconnections. When changing r3977, the value in this index is incremented.
Re index 5:
Drive object activity: When changing p0105, the value in this index is incremented.
Re index 6:
Drive object, data save.
0: There are no parameter changes to save.
1: There are parameter changes to save.
Re index 8:
Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.
Re index 9:
Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.
Re index 10:
Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.

<table>
<thead>
<tr>
<th>r7871[0...10]</th>
<th>Configuration changes drive object / Config_chng DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Units group:</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Scaling:</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert selection: 1</td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description:
Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107 or p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Reserved
[6] = Data backup required
[7] = Reserved
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107 or p0108

Dependency:
Refer to: r7868, r7870

Note:
When changing one of the following indices, then the value in this index is incremented.
Re index 1:
Drive object commissioning: When changing p0010, p0107 or p0108, the value in this index is incremented.
List of parameters

Parameters

Re index 2:
Drive object name. When changing p0199, the value in this index is incremented.

Re index 3:
Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

Re index 4:
Drive object BICO interconnections. When changing r3977, the value in this index is incremented.

Re index 6:
Drive object, data save.
0: There are no parameter changes to save.
1: There are parameter changes to save.

Re index 8:
Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.

Re index 9:
Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.

Re index 10:
Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

VECTOR_G

Can be changed: -
Calculated: -
Access level: 4
Data type: Unsigned32
Dynamic index: -
Func. diagram: -
P-Group: -
Units group: -
Unit selection: -
Not for motor type: -
Scaling: -
Expert list: 1
Min -
Max -
Factory setting -

Description:
Displays the configuration changes on the drive object.

Index:
[0] = Sum of the following indices
[1] = p0010, p0107 or p0108
[2] = Drive object name (p0199)
[3] = Structure-relevant parameters (e.g. p0180)
[4] = BICO interconnections
[5] = Activate/de-activate drive object
[6] = Data backup required
[7] = Activate/de-activate component
[8] = Reference or changeover parameters (e.g. p2000)
[9] = Parameter count through Drive Control Chart (DCC)
[10] = p0107 or p0108
[11] = p0530 or p0531
[12] = Reserved
[13] = Reserved
[14] = Reserved
[15] = SERVO or VECTOR (e.g. p0300)

Dependency:
Refer to: r7868, r7870

Note:
When changing one of the following indices, then the value in this index is incremented.

Re index 0:
Drive object commissioning: When changing p0010, p0107 or p0108, the value in this index is incremented.

Re index 2:
Drive object name. When changing p0199, the value in this index is incremented.

Re index 3:
Drive object structure. When changing a parameter that is relevant for the structure (e.g. number of data sets), the value in this index is incremented.

Re index 4:
Drive object BICO interconnections. When changing r3977, the value in this index is incremented.
Parameters
List of parameters

Re index 5:
Drive object activity: When changing p0105, the value in this index is incremented.
Re index 6:
Drive object, data save.
0: There are no parameter changes to save.
1: There are parameter changes to save.
Re index 7:
Drive object component activity: When changing either p0125 or p0145, the value in this index is incremented.
Re index 8:
Drive object changeover of units. When changing reference or changeover parameters (e.g. p2000, p0304), the value in this index is incremented.
Re index 9:
Drive object parameter count. When changing the number of parameters by loading Drive Control Chart (DCC), the value in this index is incremented.
Re index 10:
Drive object configuration. When changing either p0107 or p0108, the value in this index is incremented.
Re index 11:
Drive object bearing. When changing p0530 or p0531, the value in this index is incremented.
Re index 15:
SERVO/VECTOR configuration. When changing p0300, p0301 or p0400, the value in this index is incremented.

r7872[0...3] Status changes drive object / Status_chng DO
All objects
Can be changed: -
Calculated: -
Access level: 4
Data type: Unsigned32
Dynamic index: -
Func. diagram: -
P-Group: -
Units group: -
Unit selection: -
Not for motor type: -
Scaling: -
Expert list: 1
Min Max Factory setting
- - - - - -
Description: Displays the status changes on the drive object.
Index 0:
When changing one of the following indices, then the value in this index is incremented.
Index 1:
Drive object faults. When changing r0944, the value in this index is incremented.
Index 2:
Drive object alarms. When changing r2121, the value in this index is incremented.
Index 3:
Drive object safety messages. When changing r9744, the value in this index is incremented.

Index:
[0] = Sum of the following indices
[1] = Faults (r0944)
[2] = Alarms (r2121)
[3] = Safety messages (r9744)

Dependency:
Refer to: r7869

p7900[0...23] Drive objects priority / DO priority
CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: U, T
Calculated: -
Access level: 4
Data type: Unsigned16
Dynamic index: -
Func. diagram: -
P-Group: -
Units group: -
Unit selection: -
Not for motor type: -
Scaling: -
Expert list: 1
Min Max Factory setting
0 65535 0
Description: Sets the priority for processing the existing drive objects in the system.
The parameter enables a free sequence to be set for processing the drive objects. For this purpose all the drive object numbers existing in the system have to be written in the desired sequence into the corresponding indices of the parameter. After re-booting this sequence will be effective without a plausibility check.
With the factory setting the following priorities regarding processing are applicable:
- The drive objects are pre-sorted according to their type as follows: CONTROL UNIT, INFEED, SERVO, VECTOR, TM, HUB, CU_LINK
- If they are of the same type, they are sorted in ascending order according to their drive object number, i.e. the lower the number, the higher the priority for processing.

Index:
- [0] = Drive object number Control Unit
- [1] = Drive object number object 1
- [2] = Drive object number object 2
- [3] = Drive object number object 3
- [4] = Drive object number object 4
- [5] = Drive object number object 5
- [6] = Drive object number object 6
- [7] = Drive object number object 7
- [8] = Drive object number object 8
- [9] = Drive object number object 9
- [10] = Drive object number object 10
- [11] = Drive object number object 11
- [12] = Drive object number object 12
- [13] = Drive object number object 13
- [14] = Drive object number object 14
- [15] = Drive object number object 15
- [16] = Drive object number object 16
- [17] = Drive object number object 17
- [18] = Drive object number object 18
- [19] = Drive object number object 19
- [20] = Drive object number object 20
- [21] = Drive object number object 21
- [22] = Drive object number object 22
- [23] = Drive object number object 23

Notice: This parameter may only be used by qualified service personnel.

Note: If the same drive object numbers are used and if the existing drive object numbers in the system are entered incompletely, the content of this parameter is ignored entirely. The behavior as with factory setting will then become effective.

**r7901[0...43]** Sampling times / t_sample

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>[µs]</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the sampling times currently present on the drive unit.
For r7901[x] = 0, the following applies:
The time slice is not active.

**r7903** Hardware sampling times still assignable / HW t_samp free

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the number of hardware sampling times that can still be assigned.
These free sampling times can be used by OA applications such as DCC (Drive Control Chart) or FBLOCKS (free function blocks).

Note: OA: Open Architecture
### p8500[0...7]

**BI: Input signal bit-serially 0 / Input_sig bit 0**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td></td>
<td></td>
<td>Refer to: r8510</td>
<td>2</td>
</tr>
<tr>
<td>Data type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for bit-serial input signals.
These signals are available in binector output r8510.0 ... 7 for further interconnection.

**Index:**
0 = To BO: r8510.0
1 = To BO: r8510.1
2 = To BO: r8510.2
3 = To BO: r8510.3
4 = To BO: r8510.4
5 = To BO: r8510.5
6 = To BO: r8510.6
7 = To BO: r8510.7

**Dependency:**
Refer to: r8510

### p8501[0...21]

**BI: Input signal bit-serially 1 / Input_sig bit 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Data type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for bit-serial input signals.
These signals are available in binector output r8511.0 ... 21 for further interconnection.

**Index:**
0 = To BO: r8511.0
1 = To BO: r8511.1
2 = To BO: r8511.2
3 = To BO: r8511.3
4 = To BO: r8511.4
5 = To BO: r8511.5
6 = To BO: r8511.6
7 = To BO: r8511.7
8 = To BO: r8511.8
9 = To BO: r8511.9
10 = To BO: r8511.10
11 = To BO: r8511.11
12 = To BO: r8511.12
13 = To BO: r8511.13
14 = To BO: r8511.14
15 = To BO: r8511.15
16 = To BO: r8511.16
17 = To BO: r8511.17
18 = To BO: r8511.18
19 = To BO: r8511.19
20 = To BO: r8511.20
21 = To BO: r8511.21

**Dependency:**
Refer to: r8511
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8502</td>
<td>Sets the signal source for wordwise input signals.</td>
<td>Refer to: r8512</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>This signal value is available in connector output r8512 for further interconnection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p8503</td>
<td>Sets the signal source for wordwise input signals.</td>
<td>Refer to: r8513</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>This signal value is available in connector output r8513 for further interconnection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p8504</td>
<td>Sets the signal source for wordwise input signals.</td>
<td>Refer to: r8514</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>This signal value is available in connector output r8514 for further interconnection.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p8505</td>
<td>Sets the signal source for wordwise input signals.</td>
<td>Refer to: r8515</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>This signal value is available in connector output r8515 for further interconnection.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### r8510.0...7
**BO: Output signal bit-serially 0 / Outp_sig bit 0**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Display and binector output for the signal interconnected via binector input p8500[0...7].</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p8500

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>From Bl: p8500[0]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>From Bl: p8500[1]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>From Bl: p8500[2]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>From Bl: p8500[3]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>From Bl: p8500[4]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>From Bl: p8500[5]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>From Bl: p8500[6]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>From Bl: p8500[7]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### r8511.0...21
**BO: Output signal bit-serially 1 / Outp_sig bit 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Display and binector output for the signal interconnected via binector input p8501[0...21].</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p8501

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>From Bl: p8501[0]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>From Bl: p8501[1]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>From Bl: p8501[2]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>From Bl: p8501[3]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>From Bl: p8501[4]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>From Bl: p8501[5]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>From Bl: p8501[6]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>From Bl: p8501[7]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>From Bl: p8501[8]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>From Bl: p8501[9]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>From Bl: p8501[10]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>From Bl: p8501[11]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>From Bl: p8501[12]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>From Bl: p8501[13]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>From Bl: p8501[14]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>From Bl: p8501[15]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>From Bl: p8501[16]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>From Bl: p8501[17]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>From Bl: p8501[18]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>From Bl: p8501[19]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>From Bl: p8501[20]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>From Bl: p8501[21]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r8512
**CO: Output signal wordwise 0 / Outp_sig word 0**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:** Display and connector output for the signal interconnected via connector input p8502.

**Dependency:** Refer to: p8502

#### r8513
**CO: Output signal wordwise 1 / Outp_sig word 1**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:** Display and connector output for the signal interconnected via connector input p8503.

**Dependency:** Refer to: p8503

#### r8514
**CO: Output signal wordwise 2 / Outp_sig word 2**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:** Display and connector output for the signal interconnected via connector input p8504.

**Dependency:** Refer to: p8504

#### r8515
**CO: Output signal wordwise 3 / Outp_sig word 3**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:** Display and connector output for the signal interconnected via connector input p8505.

**Dependency:** Refer to: p8505

#### p8550
**AOP LOCAL/REMOTE / AOP LOCAL/REMOTE**

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 4
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** 0000 0000 0000 1001 bin

**Description:** Setting for saving the actual configuration of the Advanced Operator Panel (AOP).

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>LOCAL save</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Start in LOCAL</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 Change in oper.</td>
<td>Displays the macro file saved in the appropriate directory on the memory card/device memory.</td>
<td>Refer to: p0015</td>
<td>For a value = 9999999, the following applies: The read operation is still running.</td>
<td>-</td>
</tr>
<tr>
<td>03 OFF acts like OFF1</td>
<td>Displays the ACX file saved in the appropriate directory in the non-volatile memory.</td>
<td>Refer to: p0700</td>
<td>For a value = 9999999, the following applies: The read operation is still running.</td>
<td>-</td>
</tr>
<tr>
<td>04 OFF acts like OFF2</td>
<td>Displays the ACX file saved in the appropriate directory in the non-volatile memory.</td>
<td>Refer to: p1000</td>
<td>For a value = 9999999, the following applies: The read operation is still running.</td>
<td>-</td>
</tr>
<tr>
<td>05 OFF acts like OFF3</td>
<td>Displays the ACX file saved in the appropriate directory in the non-volatile memory.</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>06 Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>07 CW/CCW active</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>08 Jog active</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>09 Save speed setpoint</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>14 Inhibit operation</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>15 Inhibit parameterization</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

#### r8570[0...39] Macro drive object / Macro DO

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the macro file saved in the appropriate directory on the memory card/device memory.

**Dependency:** Refer to: p0015

**Note:** For a value = 9999999, the following applies: The read operation is still running.

#### r8571[0...39] Macro Binector Input (BI) / Macro BI

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.

**Dependency:** Refer to: p0700

**Note:** For a value = 9999999, the following applies: The read operation is still running.

#### r8572[0...39] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.

**Dependency:** Refer to: p1000

**Note:** For a value = 9999999, the following applies: The read operation is still running.

#### r8573[0...39] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the ACX file saved in the appropriate directory in the non-volatile memory.
Dependency: Refer to: p1500
Note: For a value = 9999999, the following applies: The read operation is still running.

### r8585
**Macro execution actual / Macro executed**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, TB30, TM150, TM31, VECTOR_G</td>
<td>Displays the macro currently being executed on the drive object.</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: Corresponds to the CANopen object 1000 hex.

For each detected drive, the device type is displayed in object 67FF hex + 800 hex * x (x: Drive number 0 ... 7).

### r8600
**CAN device type / Device type**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Displays all of the devices connected to the CAN bus after run-up.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: Displays the CANopen object 1000 hex.

For each detected drive, the device type is displayed in object 67FF hex + 800 hex * x (x: Drive number 0 ... 7).

### r8601
**CAN error register / Error register**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Displays the error register for CANopen.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

Description:
- Bit 0: Generic error
  - 0 signal: No error present.
  - 1 signal: Generic error present.
- Bit 1 ... 3: Not supported (always a 0 signal)
- Bit 4: Communications error
  - 0 signal: There is no message in the range 8700 ... 8799.
  - 1 signal: There is at least one message (fault or alarm) in the range 8700 ... 8799.
Bit 5 ... 6: Not supported (always a 0 signal)
Bit 7: Fault outside the range 8700 ... 8799
0 signal: There is no fault outside the range 8700 ... 8799.
1 signal: There is at least one fault outside the range 8700 ... 8799.

Note:
Corresponds to the CANopen object 1001 hex.

<table>
<thead>
<tr>
<th>p8602</th>
<th>CAN SYNC object / SYNC object</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Can be changed: T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0080 hex</td>
</tr>
</tbody>
</table>

Description: Sets the SYNC object parameter for the following CANopen objects:
- 1005 hex: COB-ID

Note: SINAMICS operates as SYNC load.
SINAMICS operates as SYNC load.
COB-ID: CAN object identification

<table>
<thead>
<tr>
<th>p8603</th>
<th>CAN COB-ID Emergency Message / COB-ID EMCY Msg</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Can be changed: T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 Dynamic index: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

Description: Sets the COB-ID for the emergency message (error telegram).
It corresponds to the CANopen objects:
- 1014 hex: COB-ID

Note: If, when downloading, the pre-set value 0 is downloaded, then the CANopen pre-set value 80 hex + Node-ID is automatically set.
Online, the value 0 is rejected as, according to the CANopen Standard, COB-ID 0 is not permitted here.
The changeover of the node ID using the hardware switch at the Control Unit or per software has no effect on the COB-ID EMCY. The saved value remains effective.

<table>
<thead>
<tr>
<th>p8604[0...1]</th>
<th>CAN node guarding / Node guarding</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Can be changed: T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16 Dynamic index: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: - Units group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

Description: Sets the node guarding parameter for the following CANopen objects:
- 100C hex: Guard Time
- 100D hex: Life Time Factor
The life time is derived by multiplying guard time by the life time factor.

Index:
[0] = Time interval [ms] for new node guarding telegram
[1] = Factor for failure of the node guarding telegram
Dependency: Only adjustable if heartbeat time = 0 (heartbeat is disabled).
Refer to: p8606

Note: For p8604[0] = 0 and/or p8604[1] = 0, the node guarding protocol is not used.
Either node guarding or heartbeat can be used.

---

**p8606**

**CAN Producer Heartbeat Time / Prod Heartb Time**

**CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min | Max | Factory setting**
---|---|---
0 [ms] | 65535 [ms] | 0 [ms]

**Description:**
Sets the time [ms] to cyclically send heartbeat telegrams.
The smallest cycle time is 100 ms.
When a 0 is written, then heartbeat telegrams are not sent.

**Dependency:**
Only adjustable if guard time = 0 (node guarding disabled).
Refer to: p8604

**Note:**
Corresponds to the CANopen object 1017 hex.
Either node guarding or heartbeat can be used.

---

**r8607[0...3]**

**CAN Identity Object / Identity object**

**CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min | Max | Factory setting**
---|---|---
- | - | -

**Description:**
General device information display.

**Index:**
[0] = Vendor ID
[1] = Product code
[2] = Revision number
[3] = Serial number

**Note:**
Corresponds to the CANopen object 1018 hex.
Re index 3:
The SINAMICS serial number comprises 60 bits. Of these bits, the following are displayed in this index:
Bits 0 ... 19: Consecutive number
Bits 20 ... 23: Production ID
- 0 hex: Development
- 1 hex: P1 unique number
- 2 hex: P2 unique number
- 3 hex: WA unique number
- 9 hex: Pattern
- F hex: All others
Bits 24 ... 27: Month of manufacture (0 means January, B means December)
Bits 28 ... 31: Year of manufacture (0 means 2002)
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p8608[0...1]</strong> CAN Clear Bus Off Error / Clear bus off err</td>
<td>As a result of a Bus Off error, the CAN controller is set into the initialization state.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The CAN controller is manually started after resolving the cause of the error with p8608[0] = 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>At 2 second intervals, the CAN controller is automatically restarted until the cause of the error has been resolved and a CAN connection has been established.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0: Inactive</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Start CAN controller</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p8609[0...1]</strong> CAN Error Behavior / Error behavior</td>
<td>Sets the behavior of the CAN node referred to the communications error or equipment fault.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0: Pre-operational</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: No change</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Stopped</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r8610[0...1]</strong> CAN First Server SDO / First server SDO</td>
<td>Displays the identifier (client/server and server/client) of the SDO channel.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
p8611[0...82] CAN Pre-defined Error Field / Pre_def err field

CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0000 hex</td>
<td>FFFF 1000 hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:**
Displays the Pre-defined Error Field of the CAN node.

It includes the number of all errors that have occurred, the number of errors that have occurred for each drive and the errors according to their history.

The first 16 bits represent the CANopen error code and the second 16 bits the SINAMICS error code.

Index 1 has the same structure - however, the drive object ID is in the second 16 bits instead of the SINAMICS error code.

CANopen error code:
- 0000 hex: No error present
- 8110 hex: Alarm A08751 present
- 8120 hex: Alarm A08752 present
- 8130 hex: Alarm A08700(F) with alarm value = 2 present
- 1000 hex: Generic error 1 present (there is at least one fault outside the range 8700 ... 8799)
- 1001 hex: Generic error 2 present (there is at least one alarm in the range 8700 ... 8799 with the exception of A08751, A08752, A08700)

All drive objects are acknowledged by writing the value 0 to the index 0. As soon as a fault has been acknowledged or an alarm cleared, then it is also cleared from the fault list.

**Index:**
- [0] = Number of all faults in the drive unit
- [1] = Most recent drive number / fault number
- [2] = Number of faults drive 1
- [3] = Fault 1/ drive 1
- [4] = Fault 2/ drive 1
- [7] = Fault 5/ drive 1
- [8] = Fault 6/ drive 1
- [9] = Fault 7/ drive 1
- [10] = Fault 8/ drive 1
- [11] = Number of faults drive 2
- [12] = Fault 1/ drive 2
- [16] = Fault 5/ drive 2
- [17] = Fault 6/ drive 2
- [18] = Fault 7/ drive 2
- [19] = Fault 8/ drive 2
- [20] = Number of faults drive 3
- [21] = Fault 1/ drive 3
- [22] = Fault 2/ drive 3
- [23] = Fault 3/ drive 3
- [26] = Fault 6/ drive 3
- [27] = Fault 7/ drive 3
- [28] = Fault 8/ drive 3
- [29] = Number of faults drive 4
- [30] = Fault 1/ drive 4

---

**Note:**
Corresponds to the CANopen object 1200 hex.

SDO: Service Data Object
Parameters

List of parameters

[31] = Fault 2/ drive 4
[32] = Fault 3/ drive 4
[33] = Fault 4/ drive 4
[34] = Fault 5/ drive 4
[35] = Fault 6/ drive 4
[36] = Fault 7/ drive 4
[37] = Fault 8/ drive 4
[38] = Number of faults drive 5
[39] = Fault 1/ drive 5
[40] = Fault 2/ drive 5
[41] = Fault 3/ drive 5
[42] = Fault 4/ drive 5
[43] = Fault 5/ drive 5
[45] = Fault 7/ drive 5
[46] = Fault 8/ drive 5
[47] = Number of faults drive 6
[48] = Fault 1/ drive 6
[49] = Fault 2/ drive 6
[50] = Fault 3/ drive 6
[51] = Fault 4/ drive 6
[52] = Fault 5/ drive 6
[53] = Fault 6/ drive 6
[54] = Fault 7/ drive 6
[55] = Fault 8/ drive 6
[56] = Number of faults drive 7
[57] = Fault 1/ drive 7
[58] = Fault 2/ drive 7
[59] = Fault 3/ drive 7
[60] = Fault 4/ drive 7
[61] = Fault 5/ drive 7
[63] = Fault 7/ drive 7
[64] = Fault 8/ drive 7
[65] = Number of faults drive 8
[66] = Fault 1/ drive 8
[67] = Fault 2/ drive 8
[68] = Fault 3/ drive 8
[69] = Fault 4/ drive 8
[70] = Fault 5/ drive 8
[71] = Fault 6/ drive 8
[72] = Fault 7/ drive 8
[73] = Fault 8/ drive 8
[74] = Number of faults Control Unit
[75] = Fault 1/Control Unit
[76] = Fault 2/Control Unit
[77] = Fault 3/Control Unit
[78] = Fault 4/Control Unit
[79] = Fault 5/Control Unit
[80] = Fault 6/Control Unit
[81] = Fault 7/Control Unit
[82] = Fault 8/Control Unit

Note: Corresponds to the CANopen object 1003 hex.
### p8620 CAN Node-ID / Node ID

- **Can be changed:** T
- **Data type:** Unsigned8
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>127</td>
<td>126</td>
</tr>
</tbody>
</table>

**Description:**
Display or setting of the CANopen Node ID.

- The Node ID can be set as follows:
  1. Using the address switch on the Control Unit.
  2. Using p8620

- **Dependency:**
  Refer to: r8621

- **Note:**
  Every node ID change only becomes effective after a POWER ON.

### r8621 CAN Node-ID active / Node ID active

- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** Communications
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the active CANopen Node ID.

**Dependency:**
Refer to: p8620

### p8622 CAN bit rate / Bit rate

- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>

**Description:**
Setting the bit rate for the CAN bus.

- The appropriate bit timings are selected that are defined in p8623 in the associated sub-index.

- **Example:**
  Bit rate = 20 kbit/s --> p8622 = 6 --> associated bit timing is in p8623[6].
### List of parameters

**Value:**
- `0`: 1 Mbit/s
- `1`: 800 kbit/s
- `2`: 500 kbit/s
- `3`: 250 kbit/s
- `4`: 125 kbit/s
- `5`: 50 kbit/s
- `6`: 20 kbit/s
- `7`: 10 kbit/s

**Dependency:** Refer to: p8623

**Note:** The parameter is not influenced by setting the factory setting.

<table>
<thead>
<tr>
<th>p8623[0...7]</th>
<th>CAN Bit Timing selection / Bit timing select</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP (CAN),</strong>&lt;br&gt;<strong>CU_G130_PN (CAN),</strong>&lt;br&gt;<strong>CU_G150_DP (CAN),</strong>&lt;br&gt;<strong>CU_G150_PN (CAN)</strong></td>
<td><strong>Description:</strong> Sets the bit timing for the C_CAN controller to the associated and selected bit rate (p8622). Bits are distributed to the following parameters of the C_CAN controller in p8623[0...7]:</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0000 hex</td>
<td>0000F 7FFF hex</td>
</tr>
<tr>
<td><strong>Calculated:</strong> T</td>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p8622</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
</tr>
<tr>
<td><code>[0]</code></td>
<td><code>1 Mbit/s</code></td>
</tr>
<tr>
<td><code>[1]</code></td>
<td><code>800 kbit/s</code></td>
</tr>
<tr>
<td><code>[2]</code></td>
<td><code>500 kbit/s</code></td>
</tr>
<tr>
<td><code>[3]</code></td>
<td><code>250 kbit/s</code></td>
</tr>
<tr>
<td><code>[4]</code></td>
<td><code>125 kbit/s</code></td>
</tr>
<tr>
<td><code>[5]</code></td>
<td><code>50 kbit/s</code></td>
</tr>
<tr>
<td><code>[6]</code></td>
<td><code>20 kbit/s</code></td>
</tr>
<tr>
<td><code>[7]</code></td>
<td><code>10 kbit/s</code></td>
</tr>
</tbody>
</table>
| **Note:** The parameter is not influenced by setting the factory setting.
**List of parameters**

### Parameters

#### p8630[0...2]
**CAN virtual objects / Virtual objects**

<table>
<thead>
<tr>
<th>Data type: Unsigned16</th>
<th>Dynamic index: -</th>
<th>Units group: -</th>
<th>Expert list: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the drive object selection (index 0), the sub-index area (index 1) and the parameter area (index 2) when using virtual objects.

This means that it is possible to access all SINAMICS parameters via CAN.

**Index 0 (drive object number):**
0: Not possible to access virtual CANopen objects
1: Device
2 ... 65535: drive object number of drive 1 ... 8

**Index 1 (sub-index area):**
0: 0 ... 255
1: 256 ... 511
2: 512 ... 767
3: 768 ... 1023

**Index 2 (parameter area):**
0: 1 ... 9999
1: 10000 ... 19999
2: 20000 ... 29999
3: 30000 ... 39999

**Index:**
[0] = Drive object number
[1] = Sub-index range
[2] = Parameter range

#### p8641
**CAN Abort Connection Option Code / Abort con opt code**

<table>
<thead>
<tr>
<th>Data type: Integer16</th>
<th>Dynamic index: -</th>
<th>Units group: -</th>
<th>Expert list: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the drive behavior if a CAN communication error occurs.

**Value:**
0: No response
1: OFF1
2: OFF2
3: OFF3

**Dependency:** Refer to: F08700
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>CAN Diagnosis Hardware / Diagnostics HW</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8680[0...36]</td>
<td>CAN Diagnosis Hardware / Diagnostics HW</td>
</tr>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>CAN Diagnosis Hardware / Diagnostics HW</td>
</tr>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Access level: 3</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

Description:
Displays the register of the CAN controller C_CAN:
Register, Message Interface Register and Message Handler Register - referred to the CAN protocol.

Index:
[0] = Control register
[1] = Status register
[2] = Error counter
[3] = Bit timing register
[4] = Interrupt register
[5] = Test register
[6] = Baud rate prescaler extension register
[7] = Interface 1 command request register
[8] = Interface 1 command mask register
[9] = Interface 1 mask 1 register
[10] = Interface 1 mask 2 register
[11] = Interface 1 arbitration 1 register
[12] = Interface 1 arbitration 2 register
[13] = Interface 1 message control register
[14] = Interface 1 data A1 register
[15] = Interface 1 data A2 register
[16] = Interface 1 data B1 register
[17] = Interface 1 data B2 register
[18] = Interface 2 command request register
[19] = Interface 2 command mask register
[20] = Interface 2 mask 1 register
[21] = Interface 2 mask 2 register
[22] = Interface 2 arbitration 1 register
[23] = Interface 2 arbitration 2 register
[24] = Interface 2 message control register
[25] = Interface 2 data A1 register
[26] = Interface 2 data A2 register
[27] = Interface 2 data B1 register
[28] = Interface 2 data B2 register
[29] = Transmission request 1 register
[30] = Transmission request 2 register
[31] = New data 1 register
[32] = New data 2 register
[33] = Interrupt pending 1 register
[34] = Interrupt pending 2 register
[35] = Message valid 1 register
[36] = Message valid 2 register

Note:
A description of the individual registers of the C_CAN controller can be taken from "C_CAN User's Manual".
### p8684  CAN NMT state after booting / NMT state aft boot

**CU_G130_DP** (CAN),  
**CU_G130_PN** (CAN),  
**CU_G150_DP** (CAN),  
**CU_G150_PN** (CAN)

**Description:** Sets the CANopen NMT state that is effective after booting.

**Value:**  
4: Stopped  
5: Operational  
127: Pre-operational

**Dependency:** Refer to: p8685

**Note:** Booting in the NMT state pre-operational corresponds to the CANopen standard

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>127</td>
<td>127</td>
</tr>
</tbody>
</table>

### p8685  CAN NMT states / NMT states

**CU_G130_DP** (CAN),  
**CU_G130_PN** (CAN),  
**CU_G150_DP** (CAN),  
**CU_G150_PN** (CAN)

**Description:** Sets and displays the CANopen NMT state.

**Value:**  
0: Initializing  
4: Stopped  
5: Operational  
127: Pre-operational  
128: Reset node  
129: Reset Communication

**Note:** The value 0 (initialization) is only displayed and cannot be set.

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>129</td>
<td>127</td>
</tr>
</tbody>
</table>

### p8699  CAN: RPDO monitoring time / RPDO t_monit

**CU_G130_DP** (CAN),  
**CU_G130_PN** (CAN),  
**CU_G150_DP** (CAN),  
**CU_G150_PN** (CAN)

**Description:** Sets the monitoring time to monitor the process data received via the CAN bus.  
A value that is not a multiple integer of CANopen (p8848) is rounded-off.  
If no process data is received within this time, fault F08702 is output.

**Dependency:** Refer to: p8848  
Refer to: F08702

**Note:** 0: The monitoring is de-activated.
**Parameters**  

**List of parameters**

---

**p8700[0...1]**  
**CAN Receive PDO 1 / Receive PDO 1**  
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** 8000 06DF hex  

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 1 (RPDO 1).

**Index:**

- [0] = PDO COB-ID  
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Note:**

- Corresponds to the CANopen object 1400 hex + 40 hex * x (x: Drive number 0 ... 7).
- Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

---

**p8701[0...1]**  
**CAN Receive PDO 2 / Receive PDO 2**  
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** 8000 06DF hex  

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 2 (RPDO 2).

**Index:**

- [0] = PDO COB-ID  
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Note:**

- Corresponds to the CANopen object 1401 hex + 40 hex * x (x: Drive number 0 ... 7).
- Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

---

**p8702[0...1]**  
**CAN Receive PDO 3 / Receive PDO 3**  
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** 8000 06DF hex  

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 3 (RPDO 3).

**Index:**

- [0] = PDO COB-ID  
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Note:**

- Corresponds to the CANopen object 1402 hex + 40 hex * x (x: Drive number 0 ... 7).
- Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object
## Parameters

### List of parameters

#### p8703[0...1] CAN Receive PDO 4 / Receive PDO 4

**VECTOR_G (CAN)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C1(3), T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
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<td>-</td>
<td></td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>8000 06DF hex</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>8000 06DF hex</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 4 (RPDO 4).

**Index:**
- [0] = PDO COB-ID
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel.

**Note:**
Corresponds to the CANopen object 1403 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

#### p8704[0...1] CAN Receive PDO 5 / Receive PDO 5

**VECTOR_G (CAN)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C1(3), T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>8000 06DF hex</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>8000 06DF hex</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 5 (RPDO 5).

**Index:**
- [0] = PDO COB-ID
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel.

**Note:**
Corresponds to the CANopen object 1404 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object

#### p8705[0...1] CAN Receive PDO 6 / Receive PDO 6

**VECTOR_G (CAN)**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C1(3), T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>8000 06DF hex</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>8000 06DF hex</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 6 (RPDO 6).

**Index:**
- [0] = PDO COB-ID
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel.

**Note:**
Corresponds to the CANopen object 1405 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1, FE and FF can be set.

PDO: Process Data Object
**Parameters**

**List of parameters**

### p8706[0...1] CAN Receive PDO 7 / Receive PDO 7

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 7 (RPDO 7).

**Index:**
- [0] = PDO COB-ID
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel.

**Note:** Corresponds to the CANopen object 1406 hex + 40 hex * x (x: Drive number 0 ... 7).

PDO: Process Data Object

### p8707[0...1] CAN Receive PDO 8 / Receive PDO 8

**Description:** Sets the communication parameters for CANopen Receive Process Data Object 8 (RPDO 8).

**Index:**
- [0] = PDO COB-ID
- [1] = PDO transmission type

**Dependency:** A valid COB-ID can only be set for the available (existing) channel.

**Note:** Corresponds to the CANopen object 1407 hex + 40 hex * x (x: Drive number 0 ... 7).

PDO: Process Data Object

### p8710[0...3] CAN Receive Mapping for RPDO 1 / Mapping RPDO 1

**Description:** Sets the mapping parameters for CANopen Receive Process Data Object 1 (RPDO 1).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
- Corresponds to the CANopen object 1600 hex + 40 hex * x (x: Drive number 0 ... 7).
- Dummy mapping not supported.
- The parameter can only be written online when the associated COB ID in p870x is set as invalid.
### Description:
Sets the mapping parameters for CANopen Receive Process Data Object 2 (RPDO 2).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1601 hex + 40 hex * x (x: Drive number 0 ... 7). 
Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

### Description:
Sets the mapping parameters for CANopen Receive Process Data Object 3 (RPDO 3).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1602 hex + 40 hex * x (x: Drive number 0 ... 7). 
Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

### Description:
Sets the mapping parameters for CANopen Receive Process Data Object 4 (RPDO 4).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1603 hex + 40 hex * x (x: Drive number 0 ... 7). 
Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.
**Parameters**

**List of parameters**

### p8714[0...3] CAN Receive Mapping for RPDO 5 / Mapping RPDO 5

**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T
- **Data type:** Unsigned32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** FFFF FFFF hex

**Description:**
Sets the mapping parameters for CANopen Receive Process Data Object 5 (RPDO 5).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1604 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

### p8715[0...3] CAN Receive Mapping for RPDO 6 / Mapping RPDO 6

**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T
- **Data type:** Unsigned32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** FFFF FFFF hex

**Description:**
Sets the mapping parameters for CANopen Receive Process Data Object 6 (RPDO 6).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1605 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.

### p8716[0...3] CAN Receive Mapping for RPDO 7 / Mapping RPDO 7

**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T
- **Data type:** Unsigned32
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** FFFF FFFF hex

**Description:**
Sets the mapping parameters for CANopen Receive Process Data Object 7 (RPDO 7).

**Index:**
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

**Note:**
Corresponds to the CANopen object 1606 hex + 40 hex * x (x: Drive number 0 ... 7).

Dummy mapping not supported.

The parameter can only be written online when the associated COB ID in p870x is set as invalid.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8717[0...3]</td>
<td>CAN Receive Mapping for RPDO 8 / Mapping RPDO 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G (CAN)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C1(3), T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9204</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>Max</td>
<td>FFFF FFFF hex</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0000 hex</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the mapping parameters for CANopen Receive Process Data Object 8 (RPDO 8).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Mapped object 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = Mapped object 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3] = Mapped object 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Corresponds to the CANopen object 1607 hex + 40 hex * x (x: Drive number 0 ... 7).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dummy mapping not supported.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The parameter can only be written online when the associated COB ID in p870x is set as invalid.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8720[0...4]</td>
<td>CAN Transmit PDO 1 / Transmit PDO 1</td>
<td></td>
<td></td>
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<tr>
<td>VECTOR_G (CAN)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C1(3), T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9208, 9210</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>Max</td>
<td>C000 06DF hex</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the communication parameters for CANopen Transmit Process Data Object 1 (TPDO 1).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = PDO COB-ID</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>[1] = PDO transmission type</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = Inhibit time (in 100 µs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[3] = Reserved</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[4] = Event timer (in ms)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>A valid COB-ID can only be set for the available (existing) channel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: p8740, p8741</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>For inhibit time and even timer, the following apply:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A value that is not a multiple integer of CANopen (4 ms) is rounded-off.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Corresponds to the CANopen object 1800 hex + 40 hex * x (x: Drive number 0 ... 7).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Transmission types 0, 1 ... F0, FE and FF can be set.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
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<tbody>
<tr>
<td>p8721[0...4]</td>
<td>CAN Transmit PDO 2 / Transmit PDO 2</td>
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<td>VECTOR_G (CAN)</td>
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<td></td>
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<tr>
<td>Can be changed:</td>
<td>C1(3), T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 9208, 9210</td>
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<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>Max</td>
<td>C000 06DF hex</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the communication parameters for CANopen Transmit Process Data Object 2 (TPDO 2).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parameters

List of parameters

Index:

- [0] = PDO COB-ID
- [1] = PDO transmission type
- [2] = Inhibit time (in 100 µs)
- [3] = Reserved
- [4] = Event timer (in ms)

Dependency:

A valid COB-ID can only be set for the available (existing) channel.

Refer to: p8740, p8741

Notice:

For inhibit time and event timer, the following apply:

A value that is not a multiple integer of CANopen (4 ms) is rounded-off.

Note:

Corresponds to the CANopen object 1801 hex + 40 hex * x (x: Drive number 0 ... 7).

Transmission types 0, 1 ... F0, FE and FF can be set.

PDO: Process Data Object

---

**p8722[0...4]**

CAN Transmit PDO 3 / Transmit PDO 3

VECTOR_G (CAN)

Can be changed: C1(3), T

Data type: Unsigned32

P-Group: Communications

Not for motor type: -

Min
0000 hex

Max
C000 06DF hex

Calculated: -

Dynamic index: -

Units group: -

Scaling: -

Expert list: 1

Access level: 3

Func. diagram: 9208, 9210

Units group: -

Unit selection: -

Description:

Sets the communication parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

---

**p8723[0...4]**

CAN Transmit PDO 4 / Transmit PDO 4

VECTOR_G (CAN)

Can be changed: C1(3), T

Data type: Unsigned32

P-Group: Communications

Not for motor type: -

Min
0000 hex

Max
C000 06DF hex

Calculated: -

Dynamic index: -

Units group: -

Scaling: -

Expert list: 1

Access level: 3

Func. diagram: 9208, 9210

Units group: -

Unit selection: -

Description:

Sets the communication parameters for CANopen Transmit Process Data Object 4 (TPDO 4).
## Parameters

### List of parameters

**Dependency:**

A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Notice:**

For inhibit time and even timer, the following apply:

A value that is not a multiple integer of CANopen (4 ms) is rounded-off.

**Note:**

Corresponds to the CANopen object 1804 hex + 40 hex * x (x: Drive number 0 ... 7). Transmission types 0, 1 ... F0, FE and FF can be set.

PDO: Process Data Object

### p8724[0...4] CAN Transmit PDO 5 / Transmit PDO 5

**VECTOR_G (CAN)**

**Can be changed:** C1(3), T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 9208

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -

**Min**  
0000 hex  
**Max**  
C000 06DF hex

**Dependency:**

A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Notice:**

For inhibit time and even timer, the following apply:

A value that is not a multiple integer of CANopen (4 ms) is rounded-off.

**Note:**

Corresponds to the CANopen object 1804 hex + 40 hex * x (x: Drive number 0 ... 7). Transmission types 0, 1 ... F0, FE and FF can be set.

PDO: Process Data Object

### p8725[0...4] CAN Transmit PDO 6 / Transmit PDO 6

**VECTOR_G (CAN)**

**Can be changed:** C1(3), T  
**Calculated:** -  
**Access level:** 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 9208

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -

**Min**  
0000 hex  
**Max**  
C000 06DF hex

**Dependency:**

A valid COB-ID can only be set for the available (existing) channel. Refer to: p8740, p8741

**Notice:**

For inhibit time and even timer, the following apply:

A value that is not a multiple integer of CANopen (4 ms) is rounded-off.
Parameters
List of parameters

Note: Corresponds to the CANopen object 1805 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1 ... F0, FE and FF can be set.
PDO: Process Data Object

p8726[0...4] CAN Transmit PDO 7 / Transmit PDO 7
VECTOR_G (CAN) Can be changed: C1(3), T Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: 9208
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0000 hex C000 06DF hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

Index: PDO COB-ID
[0] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.
Refer to: p8740, p8741

Notice: For inhibit time and even timer, the following apply:
A value that is not a multiple integer of CANopen (4 ms) is rounded-off.

Note: Corresponds to the CANopen object 1806 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1 ... F0, FE and FF can be set.
PDO: Process Data Object

p8727[0...4] CAN Transmit PDO 8 / Transmit PDO 8
VECTOR_G (CAN) Can be changed: C1(3), T Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: 9208
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0000 hex C000 06DF hex

Description: Sets the communication parameters for CANopen Transmit Process Data Object 8 (TPDO 8).

Index: PDO COB-ID
[0] = PDO transmission type
[2] = Inhibit time (in 100 µs)
[4] = Event timer (in ms)

Dependency: A valid COB-ID can only be set for the available (existing) channel.
Refer to: p8740, p8741

Notice: For inhibit time and even timer, the following apply:
A value that is not a multiple integer of CANopen (4 ms) is rounded-off.

Note: Corresponds to the CANopen object 1807 hex + 40 hex * x (x: Drive number 0 ... 7).
Transmission types 0, 1 ... F0, FE and FF can be set.
PDO: Process Data Object
### List of parameters

#### p8730[0...3] CAN Transmit Mapping for TPDO 1 / Mapping TPDO 1
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** FFFF FFFF hex  
- **Factory setting:** 0000 hex  

**Description:**
Sets the mapping parameters for CANopen Transmit Process Data Object 1 (TPDO 1).

**Index:**
- [0] = Mapped object 1  
- [1] = Mapped object 2  
- [3] = Mapped object 4  

**Note:**
Corresponds to the CANopen object 1A00 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

#### p8731[0...3] CAN Transmit Mapping for TPDO 2 / Mapping TPDO 2
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** FFFF FFFF hex  
- **Factory setting:** 0000 hex  

**Description:**
Sets the mapping parameters for CANopen Transmit Process Data Object 2 (TPDO 2).

**Index:**
- [0] = Mapped object 1  
- [1] = Mapped object 2  
- [3] = Mapped object 4  

**Note:**
Corresponds to the CANopen object 1A01 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

#### p8732[0...3] CAN Transmit Mapping for TPDO 3 / Mapping TPDO 3
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** FFFF FFFF hex  
- **Factory setting:** 0000 hex  

**Description:**
Sets the mapping parameters for CANopen Transmit Process Data Object 3 (TPDO 3).

**Index:**
- [0] = Mapped object 1  
- [1] = Mapped object 2  
- [3] = Mapped object 4  

**Note:**
Corresponds to the CANopen object 1A02 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

#### p8733[0...3] CAN Transmit Mapping for TPDO 4 / Mapping TPDO 4
**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T  
- **Data type:** Unsigned32  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** 0000 hex  
- **Max:** FFFF FFFF hex  
- **Factory setting:** 0000 hex  

**Description:**
Sets the mapping parameters for CANopen Transmit Process Data Object 4 (TPDO 4).
Index:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>= Mapped object 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>= Mapped object 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>= Mapped object 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>= Mapped object 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note:

Corresponds to the CANopen object 1A03 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

### p8734[0...3]

**CAN Transmit Mapping for TPDO 5 / Mapping TPDO 5**

**VECTOR_G (CAN)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C1(3), T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
</tbody>
</table>

**Min**

0000 hex

**Max**

FFFF FFFF hex

**Factory setting**

0000 hex

**Description:**

Sets the mapping parameters for CANopen Transmit Process Data Object 5 (TPDO 5).

**Index:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
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<tbody>
<tr>
<td>0</td>
<td>= Mapped object 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>= Mapped object 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>= Mapped object 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>= Mapped object 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

Corresponds to the CANopen object 1A04 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

### p8735[0...3]

**CAN Transmit Mapping for TPDO 6 / Mapping TPDO 6**

**VECTOR_G (CAN)**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C1(3), T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
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<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
</tbody>
</table>

**Min**

0000 hex

**Max**

FFFF FFFF hex

**Factory setting**

0000 hex

**Description:**

Sets the mapping parameters for CANopen Transmit Process Data Object 6 (TPDO 6).

**Index:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
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<tr>
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<td>= Mapped object 2</td>
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<td></td>
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<tr>
<td>2</td>
<td>= Mapped object 3</td>
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<td></td>
</tr>
<tr>
<td>3</td>
<td>= Mapped object 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

Corresponds to the CANopen object 1A05 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.

### p8736[0...3]

**CAN Transmit Mapping for TPDO 7 / Mapping TPDO 7**

**VECTOR_G (CAN)**

<table>
<thead>
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<th>Can be changed:</th>
<th>C1(3), T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
</tr>
</tbody>
</table>

**Min**

0000 hex

**Max**

FFFF FFFF hex

**Factory setting**

0000 hex

**Description:**

Sets the mapping parameters for CANopen Transmit Process Data Object 7 (TPDO 7).

**Index:**

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>0</td>
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<tr>
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<td>2</td>
<td>= Mapped object 3</td>
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</tr>
<tr>
<td>3</td>
<td>= Mapped object 4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**

Corresponds to the CANopen object 1A06 hex + 40 hex * x (x: Drive number 0 ... 7).
The parameter can only be written online when the associated COB ID in p872x is set as invalid.
p8737[0...3] CAN Transmit Mapping for TPDO 8 / Mapping TPDO 8

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G (CAN)</td>
<td>Can be changed: C1(3), T</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>0000 hex</td>
</tr>
<tr>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

Index:
- [0] = Mapped object 1
- [1] = Mapped object 2
- [3] = Mapped object 4

Note:
- Corresponds to the CANopen object 1A07 hex + 40 hex * x (x: Drive number 0 ... 7).
- The parameter can only be written online when the associated COB ID in p872x is set as invalid.

p8740[0...23] CAN channel distribution / Chann assign.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Index:
- [0] = Number of channels for receive PDOs (drive 1)
- [1] = Number of channels for transmit PDOs (drive 1)
- [2] = Reserved
- [3] = Number of channels for receive PDOs (drive 2)
- [4] = Number of channels for transmit PDOs (drive 2)
- [5] = Reserved
- [6] = Number of channels for receive PDOs (drive 3)
- [7] = Number of channels for transmit PDOs (drive 3)
- [8] = Reserved
- [9] = Number of channels for receive PDOs (drive 4)
- [10] = Number of channels for transmit PDOs (drive 4)
- [12] = Number of channels for receive PDOs (drive 5)
- [13] = Number of channels for transmit PDOs (drive 5)
- [14] = Reserved
- [15] = Number of channels for receive PDOs (drive 6)
- [16] = Number of channels for transmit PDOs (drive 6)
- [17] = Reserved
- [18] = Number of channels for receive PDOs (drive 7)
- [19] = Number of channels for transmit PDOs (drive 7)
- [20] = Reserved
- [21] = Number of channels for receive PDOs (drive 8)
- [22] = Number of channels for transmit PDOs (drive 8)
- [23] = Reserved

Dependency:
- Refer to: p8741

Note:
- Channel assignment not yet in effect. To acknowledge set p8741 = 1.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8740</td>
<td>Acknowledges the channel distribution selection made (p8740) and the setting of the predefined connection sets (p8744).</td>
<td>0: Inactive</td>
<td>Refer to: p8740, p8744</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Acknowledge configuration</td>
<td></td>
</tr>
<tr>
<td>r8742</td>
<td>Displays the RPDO channels that are still available.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Refer to: p8741</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r8743[0...7]</td>
<td>CAN assignment drive/drive ID / Drive ID</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p8741: CAN PDO configuration acknowledgement / PDO config ackn

- **CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)**
- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

#### r8742: CAN number of free RPDO channels / Qty free RPDO

- **CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Communications
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r8743[0...7]: CAN assignment drive/drive ID / Drive ID

- **CU_G130_DP (CAN), CU_G130_PN (CAN), CU_G150_DP (CAN), CU_G150_PN (CAN)**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Drive ID for 1st drive</td>
</tr>
<tr>
<td>[1]</td>
<td>Drive ID for 2nd drive</td>
</tr>
<tr>
<td>[2]</td>
<td>Drive ID for 3rd drive</td>
</tr>
<tr>
<td>[3]</td>
<td>Drive ID for 4th drive</td>
</tr>
<tr>
<td>[4]</td>
<td>Drive ID for 5th drive</td>
</tr>
<tr>
<td>[5]</td>
<td>Drive ID for 6th drive</td>
</tr>
<tr>
<td>[6]</td>
<td>Drive ID for 7th drive</td>
</tr>
<tr>
<td>[7]</td>
<td>Drive ID for 8th drive</td>
</tr>
</tbody>
</table>
### List of parameters

#### p8744
**CAN PDO mapping configuration / PDO Mapping conf.**

**VECTOR_G (CAN)**

| Description: | Selector switch for the PDO mapping. Sets the mapping for download or in the online mode after acknowledging with p8741. |
| Value: | 1: Predefined Connection Set  
2: Free PDO Mapping |

| Can be changed: | C2, T |
| Calculated: | - |
| Data type: | Integer16 |
| Dynamic index: | - |
| P-Group: | - |
| Units group: | - |
| Not for motor type: | - |
| Scaling: | - |
| Min | Max |
| 1 | 2 |
| Factory setting |

#### r8750[0...15]
**CAN mapped 16-bit receive objects / RPDO 16 mapped**

**VECTOR_G (CAN)**

| Description: | Displays the mapped 16-bit receive CANopen objects in the process data buffer. Example: If, e.g. the control word is mapped in an RPDO, then r8750 indicates the position of the control word in the process data buffer. |
| Index: | [0] = PZD 1  
[1] = PZD 2  
[2] = PZD 3  
[3] = PZD 4  
[5] = PZD 6  
[6] = PZD 7  
[7] = PZD 8  
[8] = PZD 9  
[9] = PZD 10  
[10] = PZD 11  
[12] = PZD 13  
[13] = PZD 14  
[14] = PZD 15  
[15] = PZD 16 |

<p>| Can be changed: | - |
| Calculated: | - |
| Data type: | Unsigned16 |
| Dynamic index: | - |
| P-Group: | Communications |
| Units group: | - |
| Not for motor type: | - |
| Scaling: | - |</p>
<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

#### r8751[0...15]
**CAN mapped 16-bit transmit objects / TPDO 16 mapped**

**VECTOR_G (CAN)**

| Description: | Displays mapped 16-bit transmit CANopen objects in the process data buffer. |
| Index: | [0] = PZD 1  
[1] = PZD 2  
[2] = PZD 3  
[3] = PZD 4  
[5] = PZD 6  
[6] = PZD 7 |
Parameters

List of parameters

[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16

Dependency:
Refer to: r8750

r8760[0...14]  CAN mapped 32-bit receive objects / RPDO 32 mapped
VECTOR_G (CAN)
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Displays the mapped 32-bit receive CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16

r8761[0...14]  CAN mapped 32-bit transmit objects / TPDO 32 mapped
VECTOR_G (CAN)
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Displays the mapped 32-bit transmit CANopen objects in the process data buffer.

Index:
[0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12
[12] = PZD 13 + 14
[13] = PZD 14 + 15
[14] = PZD 15 + 16
**r8784**  
**CO: CAN status word / Status word**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Ready for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>No coasting active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>No Quick Stop active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Can be freely interconnected (BI: p8785)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Control request</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Target reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Torque limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Velocity equal to zero</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Can be freely interconnected (BI: p8786)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Can be freely interconnected (BI: p8787)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**  
Corresponds to the CANopen object 6041 hex + 800 hex * x (x: Drive number 0 ... 7).

Re bit 10:  
When the ramp-function generator is activated, the interconnection from CI: p2151 = r1119 can be changed, so that to evaluate bit 10, the setpoint can be retrieved (taken) from in front of the ramp-function generator.

Re bit 10, 12:  
When braking, the two bits must indicate the same state. This is the reason that the following parameters must be set the same:

- p2161 (speed threshold value 3, for r2199.0) = p2163 (speed threshold value 4, for r2197.7)
- p2150 (hysteresis speed 3, for r2199.0) = p2164 (hysteresis speed 4, for r2197.7)

**p8785**  
**BI: CAN status word bit 8 / Status word bit 8**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Rdy for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>No coasting active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>No Quick Stop active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Can be freely interconnected (BI: p8785)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Control request</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Target reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Torque limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Velocity equal to zero</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Can be freely interconnected (BI: p8786)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Can be freely interconnected (BI: p8787)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Binector input for CANopen status word bit 8.

**Dependency:**  
Refer to: r8784

**p8786**  
**BI: CAN status word bit 14 / Status word bit 14**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Rdy for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>No coasting active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>No Quick Stop active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Can be freely interconnected (BI: p8785)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Control request</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Target reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Torque limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Velocity equal to zero</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Can be freely interconnected (BI: p8786)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Can be freely interconnected (BI: p8787)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Binector input for CANopen status word bit 14.

**Dependency:**  
Refer to: r8784
### p8787

**BI: CAN status word bit 15 / Status word bit 15**

**VECTOR_G (CAN)**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Communications
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** 0

**Description:**
Binector input for CANopen status word bit 15.

**Dependency:**
Refer to: r8784

---

### p8790

**CAN control word - auto interconnection / STW interc auto**

**VECTOR_G (CAN)**

- **Can be changed:** C1(3), T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Integer16
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Communications
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Sets the automatic BICO interconnection of the CANopen control word.

**Value:**
- 0: No interconn
- 1: Interconnection

**Dependency:**
Refer to: r2050, r2090, r2091, r2092, r2093, r8750, r8850, r8890, r8891, r8892, r8893

**Note:**
The following BICO interconnections are automatically established if the CANopen control word is mapped at one of the locations x = 0 ... 3 in the receive process data buffer.

For SINAMICS S120 with CBC10, the PZD interface IF2 is used:
- BI: p0840.0 = r889x.0
- BI: p0844.0 = r889x.1
- BI: p0848.0 = r889x.2
- BI: p0852.0 = r889x.3
- BI: p2103.0 = r889x.7

For SINAMICS S110, the PZD interface IF1 is used:
- BI: p0840.0 = r209x.0
- BI: p0844.0 = r209x.1
- BI: p0848.0 = r209x.2
- BI: p0852.0 = r209x.3
- BI: p2103.0 = r209x.7

The write access is rejected if a CANopen control word is not mapped at one of these locations. This also causes the project download of the commissioning software to be canceled.

---

### r8795

**CAN control word / Control word**

**VECTOR_G (CAN)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned16
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Access to the CANopen control word using SDO transfer.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>ON/OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Do not activate coast down</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Do not activate a Quick Stop</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Operation enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledge fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Freely interconn</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
### r8796  CAN Target Velocity / Target velocity

**VECTOR_G (CAN)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Integer32

**P-Group:** -

**Not for motor type:** -

**Min**

**Max**

**Factor setting**

**Dependency:** Refer to: p8790

**Note:** Corresponds to the CANopen object 6040 hex + 800 hex * x (x: Drive number 0 ... 7).

**Description:**
Access to the CANopen object target velocity using the SDO transfer.

The value is displayed in increments/second as standard.

**Note:**
Corresponds to the CANopen object 60FF hex + 800 hex * x (x: Drive number 0 ... 7).

The displayed value is calculated as follows:

\[ r8796 = \frac{n_{set} \text{ [RPM]}}{60 \text{ s}} \times p0408 \times 2^{p0418} \times \frac{p8798[1]}{p8798[0]} \]

### r8797  CAN Target Torque / Target torque

**VECTOR_G (CAN)**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Integer16

**P-Group:** -

**Not for motor type:** -

**Min**

**Max**

**Factory setting**

**Dependency:** Refer to: p8790

**Note:**
Corresponds to the CANopen object 6071 hex + 800 hex * x (x: Drive number 0 ... 7).

The displayed value is calculated as follows:

\[ r8797 \text{ [per mille]} = \frac{M_{set} \text{ [Nm]}}{p0333 \text{ [Nm]}} \times 1000 \]

### p8798[0...1]  CAN speed conversion factor / n_conv_factor

**VECTOR_G (CAN)**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned32

**P-Group:** -

**Not for motor type:** -

**Min**

**Max**

**Factory setting**

**Dependency:** Refer to: p8790

**Note:**
Corresponds to the CANopen object 6094 hex.

The internal velocity is calculated as follows:

\[ n_{set\_internal} = \frac{\text{object 6094.1}}{\text{object 6094.2 \times (p0408 \times 2^{p0418}) \times n_{set\_bus}}} \]

**Index:**
- [0] = Counter
- [1] = Denominator
### p8811  
**SINAMICS Link project selection / SINAMICS Link proj**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
</table>
| p8811     | Project selection for SINAMICS Link. | 16: SINAMICS Link project 16 participants  
64: SINAMICS Link project 64 participants | SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).  
The parameter must be set the same for all participants.  
A change only becomes effective after a POWER ON.  
The parameter is not influenced by setting the factory setting. |

<table>
<thead>
<tr>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Expert list</th>
<th>Calculated</th>
<th>Function diagram</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>Integer16</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### p8812[0...1]  
**SINAMICS Link settings / SINAMICS Link cl c**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
</table>
| p8812[0...1] | Sets the clock cycle for SINAMICS Link.  
Re index 0: 0 = clock synchronous mode not activated, 1 = clock synchronous mode activated  
Re index 1: Possible values: 500, 1000, 2000 µs | 0 = clock synchronous mode not activated, 1 = clock synchronous mode activated  
Re index 1: Possible values: 500, 1000, 2000 µs | SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).  
The parameter must be set the same for all participants.  
A change only becomes effective after a POWER ON.  
The parameter is not influenced by setting the factory setting. |

<table>
<thead>
<tr>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Expert list</th>
<th>Calculated</th>
<th>Function diagram</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Note

- When newly selecting the project p8811, p8812[1] is set to the factory setting.  
For p8811 = 16, the following applies: Min/max/factory setting: 500/500/500 µs  
For p8811 = 64, the following applies: Min/max/factory setting: 1000/2000/2000 µs
### p8815[0...1] IF1/IF2 PZD functionality selection / IF1/IF2 PZD fct

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selects the PZD interface for the clock cycle synchronization functionality and PROFIsafe.</td>
<td>1: Interface 1 (IF1)</td>
<td>[0]</td>
<td>Refer to: p8839</td>
<td>A change only becomes effective after POWER ON, reset or project download.</td>
</tr>
<tr>
<td></td>
<td>2: Interface 2 (IF2)</td>
<td>[1]</td>
<td></td>
<td>Example: p8815[0] = 1: IF1 supports the isochronous mode.</td>
</tr>
</tbody>
</table>

### p8829 CBE20 remote controller number / CBE20 rem ctrl num

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the number of remote controllers expected for PROFINET CBE20.</td>
<td>1: Automation or Safety</td>
</tr>
<tr>
<td></td>
<td>2: Automation and Safety</td>
</tr>
<tr>
<td></td>
<td>The &quot;Shared Device&quot; functionality is activated with a value = 2.</td>
</tr>
<tr>
<td></td>
<td>The drive is being accessed by two PROFINET controllers simultaneously:</td>
</tr>
<tr>
<td></td>
<td>- automation controller (SIMOTION or SIMATIC A-CPU).</td>
</tr>
<tr>
<td></td>
<td>- safety controller (SIMATIC F-CPU).</td>
</tr>
<tr>
<td></td>
<td>The F CPU may only use PROFIsafe telegrams.</td>
</tr>
<tr>
<td></td>
<td>The A CPU must be connected to enable the F CPU to gain access.</td>
</tr>
<tr>
<td></td>
<td>Set the value = 1 to commission the F CPU individually.</td>
</tr>
<tr>
<td></td>
<td>A change only becomes effective after a POWER ON.</td>
</tr>
</tbody>
</table>

### p8835 CBE20 firmware selection / CBE20 FW sel

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selects the firmware version for the CBE20.</td>
<td>1: PROFINET Device</td>
</tr>
<tr>
<td></td>
<td>2: PN gate</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Parameters

List of parameters

3: SINAMICS Link
4: Ethernet/IP
99: Customer-specific from the OEM directory

Note:
A change only becomes effective after a POWER ON.
The parameter is not influenced by setting the factory setting.

CBE20: Communication Board Ethernet 20

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8836 SINAMICS Link address / SINAMICS Link add</td>
<td>Selects the node address for the SINAMICS Link on the Communication Board Ethernet 20 (CBE20).</td>
<td>p8836 = 0: SINAMICS Link de-activated</td>
<td>0</td>
<td>64</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p8836 = 1 ... 64: SINAMICS Link node address</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dependency: Refer to: p8835</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>A change only becomes effective after a POWER ON. The parameter is not influenced by setting the factory setting.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8837 IF2 STW1.10 = 0 mode / IF2 STW1.10=0</td>
<td>Sets the processing mode for PROFIdrive STW1.10 &quot;master control by PLC&quot;. Generally, control world 1 is received with the first receive word (PZD1) (this is in conformance to the PROFIdrive profile). The behavior of STW1.10 = 0 corresponds to that of the PROFIdrive profile. For other applications that deviate from this, the behavior can be adapted using this particular parameter.</td>
<td>p2037 should be set to 2.</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Value: 0: Freeze setpoints and continue to process sign-of-life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Freeze setpoints and sign-of-life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Do not freeze setpoints</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommend.: Do not change the setting p2037 = 0.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 &quot;master control by PLC&quot;), then p2037 should be set to 2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8839[0...1] PZD interface hardware assignment / PZD IF HW assign</td>
<td>Assignment of the hardware for cyclic communications via PZD interface 1 (IF1) and interface 2 (IF2).</td>
<td>Inactive</td>
<td>0</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>Value: 0: Inactive</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Control Unit onboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: COMM BOARD</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>99: Automatic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Index:

- [0] = Interface 1
- [1] = Interface 2

## Dependency:

Refer to: p2030, p8815

## Note:

For value = 99 (automatic) the following applies:
- If a COMM BOARD is not inserted, then the onboard interface (PROFIBUS/PROFINET/USS) communicates via IF1.
- If a CBE20 is inserted, then the following applies:
  -- CU320-2 DP: PROFINET CBE20 communicates via IF1 and PROFIBUS/USS via IF2.
  -- CU320-2 PN: PROFINET onboard communicates via IF1 and PROFINET CBE20 via IF2.
- CAN CBC10 always communicates via IF2.

For a value not equal to 99 (automatic) the following applies:
- Both indices must be set to a number not equal to 99 (automatic).
  A change only becomes effective after POWER ON, reset or download.

### p8840

**COMM BOARD monitoring time / CB t_monit**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>[U, T]</th>
<th>Calculated:</th>
<th>[Access level: 3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 [ms]</td>
<td>65535000 [ms]</td>
<td>20 [ms]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the monitoring time to monitor the process data received via COMM BOARD.

If, during this time, the Control Unit does not receive any process data from the COMM BOARD, then an appropriate message is output.

**Dependency:**

Refer to: F08501

**Note:**

This monitoring function only monitors the connection between the Control Unit and COMM BOARD and not the data traffic on the fieldbus.

Value = 0: Monitoring is de-activated.

### p8841[0...239]

**COMM BOARD send configuration data / CB s config_dat**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>[U, T]</th>
<th>Calculated:</th>
<th>[Access level: 3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Units group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**

Sets the send configuration data for the COMM BOARD.

The setting is activated with p8842.

**Dependency:**

Refer to: p8842

**Note:**

The configuration data are specific to the inserted COMM BOARD.

For CBE20, the configuration data are not relevant.
<table>
<thead>
<tr>
<th>Parameter (p8842)</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activate COMM BOARD send configuration / CB s config act</td>
<td>Activate a modified send configuration for COMM BOARD. With p8842 = 1, the values in p8841 are transferred to the COMM BOARD and activated. After this, p8842 is automatically set to zero.</td>
<td>Unsigned16</td>
<td>Communications</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>BO: IF2 PZD state / IF2 PZD state</td>
<td>Displays the PROFinet PZD state.</td>
<td>Unsigned8</td>
<td>Communications</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>IF2 fault delay / IF2 F delay</td>
<td>Sets the delay time to initiate fault F01910 after a setpoint failure. The time until the fault is initiated can be used by the application. This means that is is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).</td>
<td>FloatingPoint32</td>
<td>Communications</td>
<td>-</td>
<td>0 [s]</td>
<td>100 [s]</td>
<td>0 [s]</td>
</tr>
</tbody>
</table>
### p8848 IF2 PZD sampling time / IF2 PZD t_sample

- **CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN**
- **Data type:** FloatingPoint32
- **P-Group:** Communications
- **Not for motor type:** -
- **Description:** Sets the sampling time for the cyclic interface 2 (IF2).
- **Note:**
  - The system only permits certain sampling times and after writing to this parameter, displays the value that has actually been set.
  - For clock cycle synchronous operation, the specified bus cycle time applies (Tdp).

#### Parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td></td>
<td>16.00</td>
<td>4.00</td>
<td>1</td>
</tr>
</tbody>
</table>

### r8849[0...139] COMM BOARD receive configuration data / CB r config_dat

- **CU_G130_DP (COMM BOARD, PROFINET), CU_G130_PN (COMM BOARD, PROFINET), CU_G150_DP (COMM BOARD, PROFINET), CU_G150_PN (COMM BOARD, PROFINET)**
- **Data type:** Unsigned16
- **P-Group:** Communications
- **Not for motor type:** -

#### Parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>Displays the receive configuration data for the COMM BOARD.</td>
</tr>
</tbody>
</table>

### r8850[0...9] CO: IF2 PZD receive word / IF2 PZD recv word

- **B_INF**
- **Data type:** Integer16
- **P-Group:** Communications
- **Not for motor type:** -

#### Parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.</td>
</tr>
</tbody>
</table>

#### Index:

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10

#### Note:

- IF2: Interface 2
- PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r8850[0...19]</strong></td>
<td>CO: IF2 PZD receive word / IF2 PZD recv word</td>
</tr>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type: Integer16</strong></td>
<td>Dynamic index: - Func. diagram: 2491</td>
</tr>
<tr>
<td><strong>P-Group: Communications</strong></td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type: -</strong></td>
<td>Scaling: 4000H Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
<tr>
<td><strong>r8850[0...3]</strong></td>
<td>CO: IF2 PZD receive word / IF2 PZD recv word</td>
</tr>
<tr>
<td><strong>ENC</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type: Integer16</strong></td>
<td>Dynamic index: - Func. diagram: 2485, 9204, 9206</td>
</tr>
<tr>
<td><strong>P-Group: Communications</strong></td>
<td>Units group: - Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type: -</strong></td>
<td>Scaling: 4000H Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

**Index:**
- \([0] = \text{PZD } 1\)
- \([1] = \text{PZD } 2\)
- \([2] = \text{PZD } 3\)
- \([3] = \text{PZD } 4\)
- \([4] = \text{PZD } 5\)
- \([5] = \text{PZD } 6\)
- \([6] = \text{PZD } 7\)
- \([7] = \text{PZD } 8\)
- \([8] = \text{PZD } 9\)
- \([9] = \text{PZD } 10\)
- \([10] = \text{PZD } 11\)
- \([11] = \text{PZD } 12\)
- \([12] = \text{PZD } 13\)
- \([13] = \text{PZD } 14\)
- \([14] = \text{PZD } 15\)
- \([15] = \text{PZD } 16\)
- \([16] = \text{PZD } 17\)
- \([17] = \text{PZD } 18\)
- \([18] = \text{PZD } 19\)
- \([19] = \text{PZD } 20\)

**Note:**
- IF2: Interface 2
- PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.

**r8850[0...3]**

**ENC**

**Dependency:**
Refer to: r8860, r8890, r8891, r8892, r8893

**Notice:**
Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.
A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

**Note:**
- IF2: Interface 2
- PZD1 to PZD4 are displayed bit-serially in r8890 to r8893.
### r8850[0...4] CO: IF2 PZD receive word / IF2 PZD recv word

**Description:** Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

**Note:** IF2: Interface 2

PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.

---

### r8850[0...31] CO: IF2 PZD receive word / IF2 PZD recv word

**Description:** Connector output for interconnecting the PZD (setpoints) received via interface 2 in the word format.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20
- [20] = PZD 21
- [21] = PZD 22
- [22] = PZD 23
- [23] = PZD 24
- [24] = PZD 25
- [25] = PZD 26
- [26] = PZD 27
- [27] = PZD 28
- [28] = PZD 29
- [29] = PZD 30
- [30] = PZD 31
- [31] = PZD 32

**Dependency:** Refer to: r8860, r8890, r8891, r8892, r8893
Parameters
List of parameters

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.
A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2
PZD1 to PZD4 are displayed bit-serially in r8890 to r8893.

<table>
<thead>
<tr>
<th>p8851[0...9]</th>
<th>CI: IF2 PZD send word / IF2 PZD send word</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Integer16</td>
</tr>
<tr>
<td>Dynamic index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10

Note: IF2: Interface 2

<table>
<thead>
<tr>
<th>p8851[0...24]</th>
<th>CI: IF2 PZD send word / IF2 PZD send word</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Integer16</td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td>Scaling: 4000H</td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description: Selects the PZD (actual values) to be sent via interface 2 in the word format.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20
- [20] = PZD 21
- [21] = PZD 22
- [22] = PZD 23
### Parameters

#### List of parameters

**p8851[0...11]**  
**CI: IF2 PZD send word / IF2 PZD send word**

**ENC**

- **Can be changed:** U, T  
- **Data type:** Unsigned32 / Integer16  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** -  
- **Max:** -

**Description:** Selects the PZD (actual values) to be sent via interface 2 in the word format.

**Index:**

- [0] = PZD 1  
- [1] = PZD 2  
- [2] = PZD 3  
- [3] = PZD 4  
- [4] = PZD 5  
- [5] = PZD 6  
- [6] = PZD 7  
- [7] = PZD 8  
- [8] = PZD 9  
- [9] = PZD 10  
- [10] = PZD 11  

**Dependency:** Refer to: p8861

**Note:** IF2: Interface 2

---

**p8851[0...4]**  
**CI: IF2 PZD send word / IF2 PZD send word**

**TB30, TM150, TM31**

- **Can be changed:** U, T  
- **Data type:** Unsigned32 / Integer16  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** -  
- **Max:** -

**Description:** Selects the PZD (actual values) to be sent via interface 2 in the word format.

**Index:**

- [0] = PZD 1  
- [1] = PZD 2  
- [2] = PZD 3  
- [3] = PZD 4  
- [4] = PZD 5

**Note:** IF2: Interface 2

---

**p8851[0...31]**  
**CI: IF2 PZD send word / IF2 PZD send word**

**VECTOR_G**

- **Can be changed:** U, T  
- **Data type:** Unsigned32 / Integer16  
- **P-Group:** Communications  
- **Not for motor type:** -  
- **Min:** -  
- **Max:** -

**Description:** Selects the PZD (actual values) to be sent via interface 2 in the word format.

**Index:**

- [0] = PZD 1  
- [1] = PZD 2  
- [2] = PZD 3  
- [3] = PZD 4  
- [4] = PZD 5  
- [5] = PZD 6
Parameters

List of parameters

[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Dependency:
Refer to: p8861

Note:
IF2: Interface 2

d8853[0...9] IF2 diagnostics PZD send / IF2 diag PZD send

Can be changed: -    Calculated: -    Access level: 3
Data type: Unsigned16 Dynamic index: -    Func. diagram: 2493
P-Group: Communications Units group: -    Unit selection: -
Not for motor type: -    Scaling: -    Expert list: 1
Min Max Factory setting

Description: Displays the sent PZD (actual values) sent via interface 2.

Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
[8] = PZD 9
[9] = PZD 10

Bit field: Bit Signal name 1 signal 0 signal FP
00 Bit 0 ON OFF -
01 Bit 1 ON OFF -
02 Bit 2 ON OFF -
03 Bit 3 ON OFF -
04 Bit 4 ON OFF -
05 Bit 5 ON OFF -
06 Bit 6 ON OFF -
07 Bit 7 ON OFF -
08 Bit 8 ON OFF -
09 Bit 9 ON OFF -
10 Bit 10 ON OFF -
11 Bit 11 ON OFF -
### r8853[0...24]  IF2 diagnostics PZD send / IF2 diag PZD send

<table>
<thead>
<tr>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -    Calculated: -    Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16    Dynamic index: -    Func. diagram: 2493</td>
</tr>
<tr>
<td>P-Group: Communications    Units group: -    Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -    Scaling: -    Expert list: 1</td>
</tr>
<tr>
<td>Min    Max    Factory setting</td>
</tr>
<tr>
<td>-    -    -</td>
</tr>
</tbody>
</table>

**Description:** Displays the sent PZD (actual values) sent via interface 2.

**Index:**
- 0 = PZD 1
- 1 = PZD 2
- 2 = PZD 3
- 3 = PZD 4
- 4 = PZD 5
- 5 = PZD 6
- 6 = PZD 7
- 7 = PZD 8
- 8 = PZD 9
- 9 = PZD 10
- 10 = PZD 11
- 11 = PZD 12
- 12 = PZD 13
- 13 = PZD 14
- 14 = PZD 15
- 15 = PZD 16
- 16 = PZD 17
- 17 = PZD 18
- 18 = PZD 19
- 19 = PZD 20
- 20 = PZD 21
- 21 = PZD 22
- 22 = PZD 23
- 23 = PZD 24
- 24 = PZD 25

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>03</td>
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<td>09</td>
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<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** IF2: Interface 2
**Description:** Displays the sent PZD (actual values) sent via interface 2.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11

**Dependency:** Refer to: p8851, p8861

**Note:** IF2: Interface 2

---

**r8853[0...11]**  
**IF2 diagnostics PZD send / IF2 diag PZD send**

**ENC**  
Can be changed: -  
Calculated: -  
Access level: 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** 2487, 9208, 9210

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting** -  -

**Description:** Displays the sent PZD (actual values) sent via interface 2.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11

**Dependency:** Refer to: p8851, p8861

**Note:** IF2: Interface 2

---

**r8853[0...4]**  
**IF2 diagnostics PZD send / IF2 diag PZD send**

**ENC**

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** 2493

**P-Group:** Communications  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
**Max**  
**Factory setting** -  -

**Description:** Displays the sent PZD (actual values) sent via interface 2.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
### r8853[0...31] IF2 diagnostics PZD send / IF2 diag PZD send

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<thead>
<tr>
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<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
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<td>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
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</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>06</td>
<td>Bit 6</td>
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<td>-</td>
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</tr>
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<td>Bit 15</td>
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</table>

**Note:** IF2: Interface 2

**Description:** Displays the sent PZD (actual values) sent via interface 2.

**Index:**

- 0 = PZD 1
- 1 = PZD 2
- 2 = PZD 3
- 3 = PZD 4
- 4 = PZD 5
- 5 = PZD 6
- 6 = PZD 7
- 7 = PZD 8
- 8 = PZD 9
- 9 = PZD 10
- 10 = PZD 11
- 11 = PZD 12
- 12 = PZD 13
- 13 = PZD 14
- 14 = PZD 15
- 15 = PZD 16
- 16 = PZD 17
- 17 = PZD 18
- 18 = PZD 19
- 19 = PZD 20
- 20 = PZD 21
- 21 = PZD 22
- 22 = PZD 23
- 23 = PZD 24
- 24 = PZD 25
- 25 = PZD 26
- 26 = PZD 27
- 27 = PZD 28
- 28 = PZD 29
- 29 = PZD 30
- 30 = PZD 31
- 31 = PZD 32

**Data type:** Unsigned16

**Dynamic index:** -

**P-Group:** Communications

**Not for motor type:** -

**Min**

**Max**

**Function diagram:** 2487, 9208, 9210

**Unit selection:** -

**Scaling:** -

**Access level:** 3

**Expert list:** 1

**Factory setting:** -
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
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<td>00</td>
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</tr>
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<td>Bit 15</td>
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<td>OFF</td>
<td>-</td>
<td></td>
</tr>
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</table>

Dependency:
Refer to: p8851, p8861

Note:
IF2: Interface 2

r8854
COMM BOARD state / CB state

Can be changed: - Calculated: - Access level: 3
Data type: Integer16 Dynamic index: - Func. diagram: -
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Status display for COMM BOARD.

Value:
0: No initialization
1: Fatal fault
2: Initialization
3: Send configuration
4: Receive configuration
5: Non-cyclic communication
6: Cyclic communications but no setpoints (stop/no clock cycle)
255: Cyclic communication

r8858[0...39]
COMM BOARD read diagnostics channel / CB diag_chan read

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: -
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description:
Displays the COMM BOARD diagnostics data.
The display depends on the COMM BOARD being used.

Example for CBE20:

- r8858[0] = 4201 --> Siemens CBE20
- r8858[1] = 1 --> firmware type = PROFINET device (see p8835)
- r8858[2] = x --> state of cyclic communication
- r8858[3] = y --> state of the IP configuration
- r8858[4] = 1281 --> device ID 0501 hex = SINAMICS S120/S150
- r8858[5 ... 39] --> only for internal Siemens diagnostics.

<table>
<thead>
<tr>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>The display depends on the COMM BOARD being used.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Example for CBE20:</th>
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</thead>
<tbody>
<tr>
<td>r8858[0] = 4201 --&gt; Siemens CBE20</td>
</tr>
<tr>
<td>r8858[1] = 1 --&gt; firmware type = PROFINET device (see p8835)</td>
</tr>
<tr>
<td>r8858[2] = x --&gt; state of cyclic communication</td>
</tr>
<tr>
<td>r8858[3] = y --&gt; state of the IP configuration</td>
</tr>
<tr>
<td>r8858[4] = 1281 --&gt; device ID 0501 hex = SINAMICS S120/S150</td>
</tr>
<tr>
<td>r8858[5 ... 39] --&gt; only for internal Siemens diagnostics.</td>
</tr>
</tbody>
</table>

**r8859[0...7]**

**COMM BOARD identification Data / CB Ident_data**

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

Example for CBE20:

- r8859[0] = 100 --> version of the interface structure V1.00
- r8859[1] = 111 --> version of the interface driver V1.11
- r8859[2] = 42 --> SIEMENS
- r8859[3] = 0 --> CBE20
- r8859[4] = 1200 --> first part, firmware version V12.00 (second part, see index 7)
- r8859[6] = 2306 --> 23rd June
- r8859[7] = 1300 --> second part, firmware version (complete version: V12.00.13.00)

**Description:**

Displays the COMM BOARD identification data

**Index:**

- [0] = Version interface structure
- [1] = Version interface driver
- [2] = Company (Siemens = 42)
- [3] = CB type
- [4] = Firmware version
- [5] = Firmware date (year)
- [6] = Firmware date (day/month)
- [7] = Firmware patch/hot fix

<table>
<thead>
<tr>
<th>Note:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Example for CBE20:</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>r8859[0] = 100 --&gt; version of the interface structure V1.00</td>
</tr>
<tr>
<td>r8859[1] = 111 --&gt; version of the interface driver V1.11</td>
</tr>
<tr>
<td>r8859[2] = 42 --&gt; SIEMENS</td>
</tr>
<tr>
<td>r8859[3] = 0 --&gt; CBE20</td>
</tr>
<tr>
<td>r8859[4] = 1200 --&gt; first part, firmware version V12.00 (second part, see index 7)</td>
</tr>
<tr>
<td>r8859[5] = 2010 --&gt; year 2010</td>
</tr>
<tr>
<td>r8859[6] = 2306 --&gt; 23rd June</td>
</tr>
<tr>
<td>r8859[7] = 1300 --&gt; second part, firmware version (complete version: V12.00.13.00)</td>
</tr>
</tbody>
</table>

**r8860[0...2]**

**CO: IF2 PZD receive double word / IF2 PZD recv DW**

<table>
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<th>Integer32</th>
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<tbody>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**

Connector output for interconnecting the PZD (setpoints) received via interface 2 in the double word format.

**Index:**

- [0] = PZD 1 + 2
- [1] = PZD 2 + 3
- [2] = PZD 3 + 4

**Dependency:**

Refer to: r8850
Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.
A BICO interconnection for a single PZD can only take place either on r8850 or r8860.

Note: IF2: Interface 2

<table>
<thead>
<tr>
<th>r8860[0...30]</th>
<th>CO: IF2 PZD receive double word / IF2 PZD recv DW</th>
</tr>
</thead>
<tbody>
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<td>VECTOR_G</td>
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<td>Calculated: -</td>
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<td></td>
<td>Dynamic index: -</td>
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<td></td>
<td>Access level: 3</td>
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<tr>
<td></td>
<td>Func. diagram: 2485, 9204, 9206</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
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<tr>
<td></td>
<td>Unit selection: -</td>
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<tr>
<td>Not for motor type:</td>
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<td>Scaling: 4000H</td>
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<td>Expert list: 1</td>
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<td>Max</td>
<td>-</td>
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<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Connector output for interconnecting the PZD (setpoints) received via interface 2 in the double word format.</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = PZD 1 + 2</td>
</tr>
<tr>
<td></td>
<td>[1] = PZD 2 + 3</td>
</tr>
<tr>
<td></td>
<td>[2] = PZD 3 + 4</td>
</tr>
<tr>
<td></td>
<td>[3] = PZD 4 + 5</td>
</tr>
<tr>
<td></td>
<td>[4] = PZD 5 + 6</td>
</tr>
<tr>
<td></td>
<td>[5] = PZD 6 + 7</td>
</tr>
<tr>
<td></td>
<td>[6] = PZD 7 + 8</td>
</tr>
<tr>
<td></td>
<td>[7] = PZD 8 + 9</td>
</tr>
<tr>
<td></td>
<td>[8] = PZD 9 + 10</td>
</tr>
<tr>
<td></td>
<td>[9] = PZD 10 + 11</td>
</tr>
<tr>
<td></td>
<td>[10] = PZD 11 + 12</td>
</tr>
<tr>
<td></td>
<td>[12] = PZD 13 + 14</td>
</tr>
<tr>
<td></td>
<td>[13] = PZD 14 + 15</td>
</tr>
<tr>
<td></td>
<td>[14] = PZD 15 + 16</td>
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<td>[15] = PZD 16 + 17</td>
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<td>[16] = PZD 17 + 18</td>
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<td>[17] = PZD 18 + 19</td>
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<td></td>
<td>[18] = PZD 19 + 20</td>
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<td></td>
<td>[19] = PZD 20 + 21</td>
</tr>
<tr>
<td></td>
<td>[20] = PZD 21 + 22</td>
</tr>
<tr>
<td></td>
<td>[21] = PZD 22 + 23</td>
</tr>
<tr>
<td></td>
<td>[22] = PZD 23 + 24</td>
</tr>
<tr>
<td></td>
<td>[23] = PZD 24 + 25</td>
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<td>[24] = PZD 25 + 26</td>
</tr>
<tr>
<td></td>
<td>[25] = PZD 26 + 27</td>
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<tr>
<td></td>
<td>[26] = PZD 27 + 28</td>
</tr>
<tr>
<td></td>
<td>[27] = PZD 28 + 29</td>
</tr>
<tr>
<td></td>
<td>[28] = PZD 29 + 30</td>
</tr>
<tr>
<td></td>
<td>[29] = PZD 30 + 31</td>
</tr>
<tr>
<td></td>
<td>[30] = PZD 31 + 32</td>
</tr>
</tbody>
</table>

Dependency: Refer to: r8850

Notice: Where there is a multiple interconnection of a connector output, all the connector inputs must either have Integer or FloatingPoint data types.
A BICO interconnection for a single PZD can only take place either on r8850 or r8860.
A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2
### p8861[0...10] CI: IF2 PZD send double word / IF2 PZD send DW

<table>
<thead>
<tr>
<th>ENC</th>
<th>Description:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Selects the PZD (actual values) to be sent via interface 2 in the double word format.</td>
<td>[0] = PZD 1 + 2</td>
</tr>
<tr>
<td>Calculated: -</td>
<td></td>
<td>[1] = PZD 2 + 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Integer32</td>
<td></td>
<td>[2] = PZD 3 + 4</td>
</tr>
<tr>
<td>Dynamic index: -</td>
<td></td>
<td>[3] = PZD 4 + 5</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td></td>
<td>[4] = PZD 5 + 6</td>
</tr>
<tr>
<td>Units group: -</td>
<td></td>
<td>[5] = PZD 6 + 7</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
<td>[6] = PZD 7 + 8</td>
</tr>
<tr>
<td>Scaling: 4000H</td>
<td></td>
<td>[7] = PZD 8 + 9</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>[8] = PZD 9 + 10</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td>[9] = PZD 10 + 11</td>
</tr>
<tr>
<td>Expert list: 1</td>
<td></td>
<td>[10] = PZD 11 + 12</td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependency: Refer to: p8851
Notice: A BICO interconnection for a single PZD can only take place either on r8851 or r8861.
Note: IF2: Interface 2

### p8861[0...30] CI: IF2 PZD send double word / IF2 PZD send DW

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Description:</th>
<th>Index:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Selects the PZD (actual values) to be sent via interface 2 in the double word format.</td>
<td>[0] = PZD 1 + 2</td>
</tr>
<tr>
<td>Calculated: -</td>
<td></td>
<td>[1] = PZD 2 + 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Integer32</td>
<td></td>
<td>[2] = PZD 3 + 4</td>
</tr>
<tr>
<td>Dynamic index: -</td>
<td></td>
<td>[3] = PZD 4 + 5</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td></td>
<td>[4] = PZD 5 + 6</td>
</tr>
<tr>
<td>Units group: -</td>
<td></td>
<td>[5] = PZD 6 + 7</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
<td>[6] = PZD 7 + 8</td>
</tr>
<tr>
<td>Scaling: 4000H</td>
<td></td>
<td>[7] = PZD 8 + 9</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>[8] = PZD 9 + 10</td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td>[9] = PZD 10 + 11</td>
</tr>
<tr>
<td>Expert list: 1</td>
<td></td>
<td>[10] = PZD 11 + 12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[12] = PZD 13 + 14</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[13] = PZD 14 + 15</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[14] = PZD 15 + 16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[15] = PZD 16 + 17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[16] = PZD 17 + 18</td>
</tr>
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<td></td>
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<td>[17] = PZD 18 + 19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[18] = PZD 19 + 20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[19] = PZD 20 + 21</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[20] = PZD 21 + 22</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[21] = PZD 22 + 23</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[22] = PZD 23 + 24</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[23] = PZD 24 + 25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[24] = PZD 25 + 26</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

[25] = PZD 26 + 27
[26] = PZD 27 + 28
[27] = PZD 28 + 29
[28] = PZD 29 + 30
[29] = PZD 30 + 31
[30] = PZD 31 + 32

Dependency:
Refer to: p8851

Notice:
A BICO interconnection for a single PZD can only take place either on r8851 or r8861.

Note:
IF2: Interface 2

r8863[0...10] IF2 diagnostics PZD send double word / IF2 diag send DW

ENC
Can be changed: -
Data type: Unsigned32
P-Group: Communications
Not for motor type: -

Description: Displays the PZD sent via interface 2 (actual values) with double word format.

Index: [0] = PZD 1 + 2
[1] = PZD 2 + 3
[2] = PZD 3 + 4
[3] = PZD 4 + 5
[4] = PZD 5 + 6
[5] = PZD 6 + 7
[6] = PZD 7 + 8
[7] = PZD 8 + 9
[8] = PZD 9 + 10
[9] = PZD 10 + 11
[10] = PZD 11 + 12

Bit field: Bit Signal name 1 signal 0 signal FP
00 Bit 0 ON OFF -
01 Bit 1 ON OFF -
02 Bit 2 ON OFF -
03 Bit 3 ON OFF -
04 Bit 4 ON OFF -
05 Bit 5 ON OFF -
06 Bit 6 ON OFF -
07 Bit 7 ON OFF -
08 Bit 8 ON OFF -
09 Bit 9 ON OFF -
10 Bit 10 ON OFF -
11 Bit 11 ON OFF -
12 Bit 12 ON OFF -
13 Bit 13 ON OFF -
14 Bit 14 ON OFF -
15 Bit 15 ON OFF -
16 Bit 16 ON OFF -
17 Bit 17 ON OFF -
18 Bit 18 ON OFF -
19 Bit 19 ON OFF -
20 Bit 20 ON OFF -
21 Bit 21 ON OFF -
22 Bit 22 ON OFF -
23 Bit 23 ON OFF -
24 Bit 24 ON OFF -
25 Bit 25 ON OFF -
26 Bit 26 ON OFF -
27 Bit 27 ON OFF -
28 Bit 28 ON OFF -
29 Bit 29 ON OFF -
Parameters

List of parameters

Notice:
A maximum of 4 indices of the "trace" function can be used.

Note:
IF2: Interface 2

r8863[0...30]  IF2 diagnostics PZD send double word / IF2 diag send DW
VECTOR_G
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: 2487
P-Group: Communications  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min - Max - Factory setting -

Description:
Displays the PZD sent via interface 2 (actual values) with double word format.

Index:

0  =  PZD  1 + 2
[1]  =  PZD  2 + 3
[2]  =  PZD  3 + 4
[3]  =  PZD  4 + 5
[4]  =  PZD  5 + 6
[5]  =  PZD  6 + 7
[6]  =  PZD  7 + 8
[7]  =  PZD  8 + 9
[8]  =  PZD  9 + 10
[9]  =  PZD 10 + 11
[10] =  PZD 11 + 12
[12] =  PZD 13 + 14
[13] =  PZD 14 + 15
[14] =  PZD 15 + 16
[15] =  PZD 16 + 17
[16] =  PZD 17 + 18
[17] =  PZD 18 + 19
[18] =  PZD 19 + 20
[19] =  PZD 20 + 21
[20] =  PZD 21 + 22
[21] =  PZD 22 + 23
[22] =  PZD 23 + 24
[23] =  PZD 24 + 25
[24] =  PZD 25 + 26
[25] =  PZD 26 + 27
[26] =  PZD 27 + 28
[27] =  PZD 28 + 29
[28] =  PZD 29 + 30
[29] =  PZD 30 + 31
[30] =  PZD 31 + 32

Bit field: Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bit 5 Bit 6 Bit 7 Bit 8 Bit 9 Bit 10 Bit 11 Bit 12 Bit 13 Bit 14
Signal name 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal 0 signal
00 ON OFF -
01 ON OFF -
02 ON OFF -
03 ON OFF -
04 ON OFF -
05 ON OFF -
06 ON OFF -
07 ON OFF -
08 ON OFF -
09 ON OFF -
10 ON OFF -
11 ON OFF -
12 ON OFF -
13 ON OFF -
14 ON OFF -
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>16</td>
<td>Bit 16</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>17</td>
<td>Bit 17</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>18</td>
<td>Bit 18</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>19</td>
<td>Bit 19</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
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<td>Bit 20</td>
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<td>-</td>
<td>3</td>
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<td>Bit 22</td>
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<td>23</td>
<td>Bit 23</td>
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<td>-</td>
<td>3</td>
</tr>
<tr>
<td>24</td>
<td>Bit 24</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>25</td>
<td>Bit 25</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>26</td>
<td>Bit 26</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>27</td>
<td>Bit 27</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>28</td>
<td>Bit 28</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>29</td>
<td>Bit 29</td>
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<td>3</td>
</tr>
<tr>
<td>30</td>
<td>Bit 30</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>31</td>
<td>Bit 31</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Notice:**
A maximum of 4 indices of the "trace" function can be used.

**Note:**
IF2: Interface 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8867[0...1]</td>
<td>IF2 PZD maximum interconnected / IF2 PZDmaxIntercon</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>B_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, TB30, TM150, TM31, VECTOR_G</td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Display for the maximum interconnected PZD in the receive/send direction

Index 0: receive (r8850, r8860)
Index 1: send (p8851, p8861)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8870[0...15]</td>
<td>SINAMICS Link receive telegram word PZD / Recv link word</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>B_INF (PROFINET), CU_G130_DP (PROFINET), CU_G130_PN (PROFINET), CU_G150_DP (PROFINET), CU_G150_PN (PROFINET), ENC (PROFINET), TB30 (PROFINET), TM150 (PROFINET), TM31 (PROFINET), VECTOR_G (PROFINET)</td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>16</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Assignment of a PZD to a telegram word from a SINAMICS Link receive telegram. PZD p2050[index] is assigned by means of p8870[index], p8872[index].

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
**Parameters**

**List of parameters**

[6] = PZD 7  
[7] = PZD 8  
[8] = PZD 9  
[9] = PZD 10  
[10] = PZD 11  
[12] = PZD 13  
[13] = PZD 14  
[14] = PZD 15  
[15] = PZD 16

**Dependency:**  
Refer to: p8872

**Note:**  
Value range:  
0: Not used  
1 ... 16: Telegram word  
A pair of values p8870[index], p8872[index] may only be used once in single a device.  
A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

### p8871[0...15]

**SINAMICS Link send telegram word PZD / Send link word**

| B_INF (PROFINET), CU_G130_DP (PROFINET), CU_G130_PN (PROFINET), CU_G150_DP (PROFINET), CU_G150_PN (PROFINET), ENC (PROFINET), TB30 (PROFINET), TM150 (PROFINET), TM31 (PROFINET), VECTOR_G (PROFINET) |
|---|---|---|
| Can be changed: T | Calculated: - | Access level: 3 |
| Data type: Unsigned16 | Dynamic index: - | Func. diagram: - |
| P-Group: Communications | Units group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

**Description:**  
Assigns a PZD to a telegram word in the SINAMICS Link send telegram.  
p8871[index] assigns PZD p2051[index].

**Index:**  
[0] = PZD 1  
[1] = PZD 2  
[2] = PZD 3  
[3] = PZD 4  
[5] = PZD 6  
[6] = PZD 7  
[7] = PZD 8  
[8] = PZD 9  
[9] = PZD 10  
[10] = PZD 11  
[12] = PZD 13  
[13] = PZD 14  
[14] = PZD 15  
[15] = PZD 16

**Dependency:**  
Refer to: p2051, p8851

**Note:**  
Value range:  
0: Not used  
1 ... 16: Send telegram word
A specific telegram word send may only be used once within a single device.
A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

### p8872[0...15]  SINAMICS Link address receive PZD / Link addr recv

<table>
<thead>
<tr>
<th>Description</th>
<th>Selects the address of the SINAMICS Link sender from which the process data (PZD) is received.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td></td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td></td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td></td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td></td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td></td>
</tr>
<tr>
<td>[5] = PZD 6</td>
<td></td>
</tr>
<tr>
<td>[6] = PZD 7</td>
<td></td>
</tr>
<tr>
<td>[7] = PZD 8</td>
<td></td>
</tr>
<tr>
<td>[8] = PZD 9</td>
<td></td>
</tr>
<tr>
<td>[9] = PZD 10</td>
<td></td>
</tr>
<tr>
<td>[10] = PZD 11</td>
<td></td>
</tr>
<tr>
<td>[12] = PZD 13</td>
<td></td>
</tr>
<tr>
<td>[13] = PZD 14</td>
<td></td>
</tr>
<tr>
<td>[14] = PZD 15</td>
<td></td>
</tr>
<tr>
<td>[15] = PZD 16</td>
<td></td>
</tr>
<tr>
<td>Dependency</td>
<td>Refer to: p8870</td>
</tr>
<tr>
<td>Note</td>
<td>Value range:</td>
</tr>
<tr>
<td></td>
<td>0: Not used</td>
</tr>
<tr>
<td></td>
<td>1 ... 64: Address</td>
</tr>
<tr>
<td></td>
<td>A change only becomes effective after POWER ON, reset, project download or p8842 = 1.</td>
</tr>
</tbody>
</table>

### r8874[0...9]  IF2 diagnostics bus address PZD receive / IF2 diag addr recv

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the bus address of sender from which the PZD is received.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td></td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td></td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td></td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td></td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td></td>
</tr>
<tr>
<td>[5] = PZD 6</td>
<td></td>
</tr>
<tr>
<td>[6] = PZD 7</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### r8874[0...19] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Index</th>
<th>Value range</th>
</tr>
</thead>
<tbody>
<tr>
<td>[7]</td>
<td>Displays the bus address of sender from which the PZD is received.</td>
<td></td>
<td>0 - 125: Bus address of the sender</td>
</tr>
<tr>
<td>[8]</td>
<td></td>
<td></td>
<td>255: Not assigned</td>
</tr>
<tr>
<td>[9]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CU_G130_DP,** **CU_G130_PN,** **CU_G150_DP,** **CU_G150_PN**

**Data type:** Unsigned16

**P-Group:** Communications

**Min**

**Max**

**Factory setting**

**Expert list:** 1

**Unit selection:** -

**Func. diagram:** -

**Units group:** -

**Dynamic index:** -

**Calculated:** -

**Can be changed:** -

**Access level:** 3

**Note:**

IF2: Interface 2

Value range:

0 - 125: Bus address of the sender

255: Not assigned

---

#### r8874[0...3] IF2 diagnostics bus address PZD receive / IF2 diag addr recv

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Index</th>
<th>Value range</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Displays the bus address of sender from which the PZD is received.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[2]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[3]</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ENC**

**Data type:** Unsigned16

**P-Group:** Communications

**Min**

**Max**

**Factory setting**

**Expert list:** 1

**Unit selection:** -

**Func. diagram:** -

**Units group:** -

**Dynamic index:** -

**Calculated:** -

**Can be changed:** -

**Access level:** 3

**Note:**

IF2: Interface 2

Value range:

0 - 125: Bus address of the sender

255: Not assigned
### List of parameters

#### r8874[0...4]
**IF2 diagnostics bus address PZD receive / IF2 diag addr recv**

<table>
<thead>
<tr>
<th>TB30, TM150, TM31</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned16</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the bus address of sender from which the PZD is received.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

#### r8874[0...31]
**IF2 diagnostics bus address PZD receive / IF2 diag addr recv**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type:</td>
<td>Dynamic index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>Unsigned16</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group:</td>
<td>Units group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the bus address of sender from which the PZD is received.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20
- [20] = PZD 21
- [21] = PZD 22
- [22] = PZD 23
- [23] = PZD 24
- [24] = PZD 25
- [25] = PZD 26
- [26] = PZD 27
- [27] = PZD 28
- [28] = PZD 29
- [29] = PZD 30
- [30] = PZD 31
- [31] = PZD 32

**Note:** IF2: Interface 2

**Value range:**
- 0 - 125: Bus address of the sender
- 255: Not assigned
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8875[0...9]</td>
<td>IF2 diagnostics telegram offset PZD receive / IF diag offs recv</td>
<td>B-INF</td>
<td>Unsigned16</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>r8875[0...19]</td>
<td>IF2 diagnostics telegram offset PZD receive / IF diag offs recv</td>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Unsigned16</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>r8875[0...3]</td>
<td>IF2 diagnostics telegram offset PZD receive / IF diag offs recv</td>
<td>ENC</td>
<td>Unsigned16</td>
<td>-</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the byte offset of the PZD in the receive telegram.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11
- [12] = PZD 13
- [13] = PZD 14
- [14] = PZD 15
- [15] = PZD 16
- [16] = PZD 17
- [17] = PZD 18
- [18] = PZD 19
- [19] = PZD 20

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Index:

[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4

Note:

IF2: Interface 2
Value range:
0 - 242: Byte offset
255: Not assigned

---

**r8875[0...4]**

IF2 diagnostics telegram offset PZD receive / IF diag offs recv

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the byte offset of the PZD in the receive telegram.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = PZD 1</td>
</tr>
<tr>
<td></td>
<td>[1] = PZD 2</td>
</tr>
<tr>
<td></td>
<td>[2] = PZD 3</td>
</tr>
<tr>
<td></td>
<td>[3] = PZD 4</td>
</tr>
</tbody>
</table>

---

**r8875[0...31]**

IF2 diagnostics telegram offset PZD receive / IF diag offs recv

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the byte offset of the PZD in the receive telegram.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index:</td>
<td>[0] = PZD 1</td>
</tr>
<tr>
<td></td>
<td>[1] = PZD 2</td>
</tr>
<tr>
<td></td>
<td>[2] = PZD 3</td>
</tr>
<tr>
<td></td>
<td>[3] = PZD 4</td>
</tr>
<tr>
<td></td>
<td>[5] = PZD 6</td>
</tr>
<tr>
<td></td>
<td>[6] = PZD 7</td>
</tr>
<tr>
<td></td>
<td>[7] = PZD 8</td>
</tr>
<tr>
<td></td>
<td>[8] = PZD 9</td>
</tr>
<tr>
<td></td>
<td>[9] = PZD 10</td>
</tr>
<tr>
<td></td>
<td>[10] = PZD 11</td>
</tr>
<tr>
<td></td>
<td>[12] = PZD 13</td>
</tr>
<tr>
<td></td>
<td>[13] = PZD 14</td>
</tr>
<tr>
<td></td>
<td>[14] = PZD 15</td>
</tr>
<tr>
<td></td>
<td>[15] = PZD 16</td>
</tr>
<tr>
<td></td>
<td>[16] = PZD 17</td>
</tr>
<tr>
<td></td>
<td>[17] = PZD 18</td>
</tr>
<tr>
<td></td>
<td>[18] = PZD 19</td>
</tr>
<tr>
<td></td>
<td>[19] = PZD 20</td>
</tr>
<tr>
<td></td>
<td>[20] = PZD 21</td>
</tr>
<tr>
<td></td>
<td>[21] = PZD 22</td>
</tr>
<tr>
<td></td>
<td>[22] = PZD 23</td>
</tr>
<tr>
<td></td>
<td>[23] = PZD 24</td>
</tr>
<tr>
<td></td>
<td>[24] = PZD 25</td>
</tr>
<tr>
<td></td>
<td>[25] = PZD 26</td>
</tr>
<tr>
<td></td>
<td>[26] = PZD 27</td>
</tr>
<tr>
<td></td>
<td>[27] = PZD 28</td>
</tr>
</tbody>
</table>
### List of parameters

#### Parameters

[28] = PZD 29  
[29] = PZD 30  
[30] = PZD 31  
[31] = PZD 32  

**Note:**  
IF2: Interface 2  
Value range:  
0 - 242: Byte offset  
255: Not assigned  

<table>
<thead>
<tr>
<th>r8876[0...9]</th>
<th>IF2 diagnostics telegram offset PZD send / IF2 diag offs send</th>
</tr>
</thead>
<tbody>
<tr>
<td>B_INF</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td>-</td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td>-</td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td>-</td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td>-</td>
</tr>
<tr>
<td>[4] = PZD 5</td>
<td>-</td>
</tr>
<tr>
<td>[5] = PZD 6</td>
<td>-</td>
</tr>
<tr>
<td>[6] = PZD 7</td>
<td>-</td>
</tr>
<tr>
<td>[7] = PZD 8</td>
<td>-</td>
</tr>
<tr>
<td>[8] = PZD 9</td>
<td>-</td>
</tr>
<tr>
<td>[9] = PZD 10</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r8876[0...24]</th>
<th>IF2 diagnostics telegram offset PZD send / IF2 diag offs send</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned16 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: Communications Unit selection: -</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min Max Factory setting</td>
</tr>
<tr>
<td>[0] = PZD 1</td>
<td>-</td>
</tr>
<tr>
<td>[1] = PZD 2</td>
<td>-</td>
</tr>
<tr>
<td>[2] = PZD 3</td>
<td>-</td>
</tr>
<tr>
<td>[3] = PZD 4</td>
<td>-</td>
</tr>
<tr>
<td>[4] = PZD 5</td>
<td>-</td>
</tr>
<tr>
<td>[5] = PZD 6</td>
<td>-</td>
</tr>
<tr>
<td>[6] = PZD 7</td>
<td>-</td>
</tr>
<tr>
<td>[7] = PZD 8</td>
<td>-</td>
</tr>
<tr>
<td>[8] = PZD 9</td>
<td>-</td>
</tr>
<tr>
<td>[9] = PZD 10</td>
<td>-</td>
</tr>
<tr>
<td>[10] = PZD 11</td>
<td>-</td>
</tr>
<tr>
<td>[11] = PZD 12</td>
<td>-</td>
</tr>
<tr>
<td>[12] = PZD 13</td>
<td>-</td>
</tr>
<tr>
<td>[13] = PZD 14</td>
<td>-</td>
</tr>
<tr>
<td>[14] = PZD 15</td>
<td>-</td>
</tr>
<tr>
<td>[15] = PZD 16</td>
<td>-</td>
</tr>
<tr>
<td>[16] = PZD 17</td>
<td>-</td>
</tr>
<tr>
<td>[17] = PZD 18</td>
<td>-</td>
</tr>
<tr>
<td>[18] = PZD 19</td>
<td>-</td>
</tr>
<tr>
<td>[19] = PZD 20</td>
<td>-</td>
</tr>
<tr>
<td>[20] = PZD 21</td>
<td>-</td>
</tr>
<tr>
<td>[21] = PZD 22</td>
<td>-</td>
</tr>
<tr>
<td>[22] = PZD 23</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Value range</th>
</tr>
</thead>
<tbody>
<tr>
<td>[23] = PZD 24</td>
<td>Displays the byte offset of the PZD in the send telegram.</td>
<td>[0...11]</td>
<td>0 - 242: Byte offset 255: Not assigned</td>
</tr>
<tr>
<td>[24] = PZD 25</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r8876[0...11] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

<table>
<thead>
<tr>
<th>ENC</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the byte offset of the PZD in the send telegram.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8
- [8] = PZD 9
- [9] = PZD 10
- [10] = PZD 11

**Note:** IF2: Interface 2

**Value range:**

- 0 - 242: Byte offset
- 255: Not assigned

#### r8876[0...4] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

<table>
<thead>
<tr>
<th>TB30, TM150, TM31</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the byte offset of the PZD in the send telegram.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

#### r8876[0...31] IF2 diagnostics telegram offset PZD send / IF2 diag offs send

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the byte offset of the PZD in the send telegram.

**Index:**

- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
Parameters

List of parameters

[7] = PZD 8
[8] = PZD 9
[9] = PZD 10
[10] = PZD 11
[12] = PZD 13
[13] = PZD 14
[14] = PZD 15
[15] = PZD 16
[16] = PZD 17
[17] = PZD 18
[18] = PZD 19
[19] = PZD 20
[20] = PZD 21
[21] = PZD 22
[22] = PZD 23
[23] = PZD 24
[24] = PZD 25
[25] = PZD 26
[26] = PZD 27
[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32

Note:
IF2: Interface 2
Value range:
0 - 242: Byte offset
255: Not assigned

p8880[0...15]  BI: IF2 binector-connector converter status word 1 / Bin/con ZSW1

B_INF,  
CU_G130_DP,  
CU_G130_PN,  
CU_G150_DP,  
CU_G150_PN, ENC, VECTOR_G

Can be changed: U, T  
Calculated: -  
Access level: 3

Data type: Unsigned32 / Binary  
Dynamic index: -  
Func. diagram: 2489

P-Group: Communications  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min -  
Max -  
Factory setting 0

Description:
Selects bits to be sent via interface 2.  
The individual bits are combined to form status word 1.

Index:
[0] = Bit 0  
[1] = Bit 1  
[2] = Bit 2  
[3] = Bit 3  
[4] = Bit 4  
[5] = Bit 5  
[6] = Bit 6  
[7] = Bit 7  
[8] = Bit 8  
[9] = Bit 9  
[10] = Bit 10  
[12] = Bit 12  
[13] = Bit 13  
[14] = Bit 14  
[15] = Bit 15

Dependency:  
Refer to: p8888, r8889
| Description: | Selects bits to be sent via interface 2. The individual bits are combined to form status word 2. |
| Index: | |
| Min | Max | Factory setting |
| 0 | 0 | |

Dependency: Refer to: p8888, r8889

| Description: | Selects bits to be sent via interface 2. The individual bits are combined to form free status word 3. |
| Index: | |
| Min | Max | Factory setting |
| 0 | 0 | |

Dependency: Refer to: p8888, r8889
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<td>Scaling: -</td>
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<td>[15] = Bit 15</td>
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<td>Scaling: -</td>
<td>Expert list: 1</td>
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### Parameters

**List of parameters**

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<th>Dependency</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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**Bit field:**

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<th>Signal name</th>
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<th>FP</th>
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<td>Bit 0</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
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<td>Bit 8</td>
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<td>09</td>
<td>Bit 9</td>
<td>Inverted</td>
<td>Not inverted</td>
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</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
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<td>Bit 11</td>
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**Dependency:**

Refer to: p8880, p8881, p8882, p8883, p8884, r8889

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<tr>
<th>Parameter</th>
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<th>Dependency</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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<tbody>
<tr>
<td>r8889[0...4]</td>
<td>CO: IF2 send binector-connector converter status word / Bin/con ZSW send</td>
<td>Connector output to interconnect the status words to a PZD send word.</td>
<td>[0] = Status word 1, [1] = Status word 2, [2] = Free status word 3, [3] = Free status word 4, [4] = Free status word 5</td>
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**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
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<th>FP</th>
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<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>ON</td>
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<td>-</td>
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<tr>
<td>01</td>
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<tr>
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<tr>
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<tr>
<td>07</td>
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<td>08</td>
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### Description:
Binector output for bit-serial interconnection of PZD1 (normally control word 1) received via interface 2.

### Bit field:
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<tr>
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### Dependency:
Refer to: p8850

### Note:
IF2: Interface 2
Parameters

List of parameters

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Dependency: Refer to: r8850
Note: IF2: Interface 2

r8892.0...15 BO: IF2 PZD3 receive bit-serial / IF2 PZD3 recv bitw

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, VECTOR_G

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: 2485, 9204, 9206
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Binector output for bit-serial interconnection of PZD3 received via interface 2.

Dependency: Refer to: r8850
Note: IF2: Interface 2

r8893.0...15 BO: IF2 PZD4 receive bit-serial / IF2 PZD4 recv bitw

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, VECTOR_G

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dynamic index: - Func. diagram: 2485, 9204, 9206
P-Group: Communications Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description: Binector output for bit-serial interconnection of PZD4 (normally control word 2) received via interface 2.

Dependency: Refer to: r8850
Note: IF2: Interface 2
## Parameters

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<th>FP</th>
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</table>

**Dependency:** Refer to: p8899

**Description:** Binector output for bit-serial interconnection of a PZD word received via interface 2. The PZD is selected via p8899[0].
### List of parameters

#### p8898[0...1] IF2 invert connector-binector converter binector output / Con/bin outp inv

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Bit 12</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### p8899[0...1] CI: IF2 connector-binector converter signal source / Con/bin S_src

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

### Description

Using p8898[0], the signals of CI: p8899[0] are influenced.
Using p8898[1], the signals of CI: p8899[1] are influenced.

Setting to invert the individual binector outputs of the connector-binector converter.

Sets the signal source for the connector-binector converter.

A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).

Refer to: p8898, p8899, r8898, r8895, p8899
Note: From the signal source set via the connector input, the corresponding lower 16 bits are converted. 
P8899[0...1] together with r8894.0...15 and r8895.0...15 forms two connector-binector converters: 
Connector input p8899[0] to binector output in r8894.0...15 
Connector input p8899[1] to binector output in r8895.0...15

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE Name of Station / IE Name Stat</td>
<td>Sets the station name for the Industrial Ethernet interface (X127) on the Control Unit. The active station name is displayed in r8910.</td>
<td>Refer to: p8905, r8910</td>
<td>An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual. The interface configuration (p8900 and following) is activated with p8905 = 1. The parameter is not influenced by setting the factory setting.</td>
</tr>
<tr>
<td>IE IP Address of Station / IE IP of Stat</td>
<td>Sets the IP address for the Industrial Ethernet interface (X127) on the Control Unit. The active IP address is displayed in r8911.</td>
<td>Refer to: p8905, r8911</td>
<td>The interface configuration (p8900 and following) is activated with p8905 = 1. The parameter is not influenced by setting the factory setting.</td>
</tr>
<tr>
<td>IE Default Gateway of Station / IE Def Gateway</td>
<td>Sets the default gateway for the Industrial Ethernet interface (X127) on the Control Unit. The active default gateway is displayed in r8912.</td>
<td>Refer to: p8905, r8912</td>
<td>The interface configuration (p8900 and following) is activated with p8905 = 1. The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>
### p8903[0...3] IE Subnet Mask of Station / IE Subnet Mask

<table>
<thead>
<tr>
<th>Parameters</th>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned8</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>255</td>
</tr>
</tbody>
</table>

**Description:** Sets the subnet mask for the Industrial Ethernet interface (X127) on the Control Unit. The active subnet mask is displayed in r8913.

**Dependency:** Refer to: p8905, r8913

**Note:** The parameter is not influenced by setting the factory setting.

### p8904 IE DHCP mode / IE DHCP mode

<table>
<thead>
<tr>
<th>Parameters</th>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned8</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:** Sets the DHCP mode for the Industrial Ethernet interface (X127) on the Control Unit. The interface configuration (p8900 and following) is activated with p8905 = 1. The parameter is not influenced by setting the factory setting.

**Note:**
- If value = 0: DHCP deactivated.
- If value = 2: DHCP activated.
  - Re value = 1, 3: Reserved.

### p8905 IE Interface configuration / IE IF config

<table>
<thead>
<tr>
<th>Parameters</th>
<th>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:** Setting to activate the interface configuration for the Industrial Ethernet interface (X127) on the Control Unit. p8905 is automatically set to 0 at the end of an operation.

**Value:**
- 0: No function
- 1: Activate configuration
- 2: Activate and save configuration
- 3: Delete configuration

**Dependency:** Refer to: p8900, p8901, p8902, p8903
Refer to: A08561

**Note:**
- Re p8905 = 1: The interface configuration (p8900 and following) is activated.
- Re p8905 = 2: The interface configuration (p8900 and following) is activated and saved to non-volatile memory.
- Re p8905 = 3: The interface configuration is reset to the factory setting at all points.
  - The factory settings for the interface configuration are loaded on activation (p8905 = 1) or at the next POWER ON.
## List of parameters

### p8908  Activate FTP / Act FTP

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Activation of the FTP server.
Permits the FTP access to the /INSTALL/SINAMICS directory of the memory card.

#### Value:
- **0**: No
- **1**: Yes

#### Note:
- Activation of the FTP server becomes effective immediately.
- Deactivation only becomes effective after POWER ON of the Control Unit.
- Before commissioning the system for the first time, the FTP server is activated independent of the parameter setting.

### r8909  PN device ID / PN device ID

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Displays the PROFINET Device ID.
Every SINAMICS device type has its own PROFINET Device ID and its own PROFINET GSD.

#### Note:
- List of the SINAMICS Device IDs:
  - 0501 hex: S120/S150
  - 0504 hex: G130/G150
  - 0505 hex: GM150
  - 0509 hex: GL150
  - 050A hex: DC MASTER
  - 050B hex: SL150
  - 050C hex: SM120
  - 050E hex: S110
  - 050F hex: G120P
  - 0510 hex: G120C
  - 0511 hex: G120
  - 0512 hex: G120D

### r8910[0...239]  IE Name of Station active / IE Name Stat act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td>Can be changed: - Calculated: - Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Displays the active station name for the Industrial Ethernet interface (X127) on the Control Unit.
### List of parameters

#### r8911[0...3]  IE IP Address of Station active / IE IP of Stat act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Displays the active IP address for the Industrial Ethernet interface (X127) on the Control Unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Can be changed: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Data type: Unsigned8</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>P-Group: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Min</td>
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</tbody>
</table>

#### r8912[0...3]  IE Default Gateway of Station active / IE Def Gateway act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Displays the active default gateway for the Industrial Ethernet interface (X127) on the Control Unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Value</td>
<td>Can be changed: -</td>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Data type: Unsigned8</td>
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</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>P-Group: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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#### r8913[0...3]  IE Subnet Mask of Station active / IE Subnet Mask act

<table>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Displays the active subnet mask for the Industrial Ethernet interface (X127) on the Control Unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Can be changed: -</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Data type: Unsigned8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>P-Group: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Not for motor type: -</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
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</tr>
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</table>

#### r8914  IE DHCP mode of station active / IE DHCP mode act

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Displays the active DHCP mode for the Industrial Ethernet interface (X127) on the Control Unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Can be changed: -</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Data type: Unsigned8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>P-Group: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Min</td>
</tr>
</tbody>
</table>

#### r8915[0...5]  IE MAC Address of Station / IE MAC of Station

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Displays the MAC address for the Industrial Ethernet interface (X127) on the Control Unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Can be changed: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Data type: Unsigned8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>P-Group: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Not for motor type: -</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>Min</td>
</tr>
</tbody>
</table>
### List of parameters

#### p8920[0...239]
**PN Name of Station / PN Name Stat**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN, CU_G150_PN</td>
<td>Sets the station name for the onboard PROFINET interface on the Control Unit.</td>
<td>U, T</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
- The interface configuration (p8920 and following) is activated with p8925 = 1.
- The parameter is not influenced by setting the factory setting.

#### p8921[0...3]
**PN IP address of station / PN IP of stat**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN, CU_G150_PN</td>
<td>Sets the IP address for the onboard PROFINET interface on the Control Unit.</td>
<td>U, T</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>255</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- The interface configuration (p8920 and following) is activated with p8925 = 1.
- The parameter is not influenced by setting the factory setting.

#### p8922[0...3]
**PN Default Gateway of Station / PN Def Gateway**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN, CU_G150_PN</td>
<td>Sets the default gateway for the onboard PROFINET interface on the Control Unit.</td>
<td>U, T</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>255</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- The interface configuration (p8920 and following) is activated with p8925 = 1.
- The parameter is not influenced by setting the factory setting.

#### p8923[0...3]
**PN Subnet Mask of Station / PN Subnet Mask**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_PN, CU_G150_PN</td>
<td>Sets the subnet mask for the onboard PROFINET interface on the Control Unit.</td>
<td>U, T</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>255</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- The interface configuration (p8920 and following) is activated with p8925 = 1.
- The parameter is not influenced by setting the factory setting.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8925</td>
<td>PN interface configuration / PN IF config</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting to activate the interface configuration for the onboard PROFINET interface on the Control Unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>p8925 is automatically set to 0 at the end of the operation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The interface configuration (p8920 and following) is activated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The interface configuration (p8920 and following) is activated and saved to non-volatile memory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Restores all memory locations for the interface configuration to the factory settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The factory settings for the interface configuration are loaded on activation (p8925 = 1) or at the next POWER ON.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p8929</td>
<td>PN remote controller number / PN rem ctrl num</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the number of remote controllers expected for PROFINET onboard.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The &quot;Shared Device&quot; functionality is activated with a value = 2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The drive is being accessed by two PROFINET controllers simultaneously:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- automation controller (SIMOTION or SIMATIC A-CPU).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- safety controller (SIMATIC F-CPU).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The F CPU may only use PROFIsafe telegrams.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A change only becomes effective after POWER ON, reset or download.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r8930[0...239]</td>
<td>PN Name of Station active / PN Name Stat act</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays the active station name for the onboard PROFINET interface on the Control Unit.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### r8931[0...3] PN IP Address of Station active / PN IP of Stat act

- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Min:** -
- **Description:** Displays the active IP address for the onboard PROFINET interface on the Control Unit.

### r8932[0...3] PN Default Gateway of Station active / PN Def Gateway act

- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Min:** -
- **Description:** Displays the active default gateway for the onboard PROFINET interface on the Control Unit.

### r8933[0...3] PN Subnet Mask of Station active / PN Subnet Mask act

- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Min:** -
- **Description:** Displays the active subnet mask for the onboard PROFINET interface on the Control Unit.

### r8935[0...1] PN MAC Address of Station / PN MAC of Station

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** -
- **Min:** Max
- **Description:** Displays the MAC address for the onboard PROFINET interface on the Control Unit.

### r8936[0...1] PN state cyclic connections / PN stat cyc conn

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** -
- **Min:** Max
- **Description:** Displays the state of the cyclic PROFINET connections.
- **Value:**
  - 0: Interrupted
  - 1: Not connected
  - 2: Connection starts to be established
  - 3: Module information expected
  - 4: Module information received
  - 5: Module address expected
  - For two connections (Shared Device) the display in the index depends on the sequence in which the connections are established.
Parameters

List of parameters

6: Module address received
7: Parameterization data expected
8: Parameterization data received
9: Evaluate parameterization data
10: Connection being established completion expected
11: Configured controller RUN expected
12: Configured controller STOP
13: Configured controller RUN

Dependency:
Refer to: p829

Note:
If value = 10:
If the connection remains in this state, then when using PROFINET IRT the following can apply:
- topology error (incorrect port assignment).
- synchronization missing.

r8937[0...5] PN diagnostics / PN diag

CU_G130_PN,
CU_G150_PN

Can be changed: -
Data type: Unsigned32
P-Group: -
Not for motor type: -
Min
Max

Calculated: -
Dynamic index: -
Units group: -
Scaling: -
Expert list: 1

Access level: 3
Func. diagram: -
Unit selection: -
Factory setting

Description:
Display to diagnose the cyclic PROFINET connections.

Index:
[0] = Number of cyclic connections
[1] = Number of send subslots of all connections
[2] = Number of send net data (bytes) of all connections
[3] = Number of receive subslots of all connections
[4] = Number of receive net data (bytes) of all connections
[5] = Connection type (RT, IRT)

Dependency:
Refer to: p829

Note:
Refer index 5:
Bit 0 = 1: there is at least one RT connection.
Bit 1 = 1: there is an IRT connection.

r8939 PN DAP ID / PN DAP ID

CU_G130_PN,
CU_G150_PN

Can be changed: -
Data type: Unsigned32
P-Group: -
Not for motor type: -
Min
Max

Calculated: -
Dynamic index: -
Units group: -
Scaling: -
Expert list: 1

Access level: 3
Func. diagram: -
Unit selection: -
Factory setting

Description:
Displays the PROFINET Device Access Point ID (DAP ID) for the onboard PROFINET interface.
The combination of device ID (r8909) and DAP ID uniquely identifies a PROFINET access point.

Note:
List of the SINAMICS DAP IDs:
20005 hex: CBE20 V4.3
20006 hex: CBE20 V4.4
20007 hex: CBE20 V4.5
20010 hex: CU310-2 PN V4.4
20014 hex: CU310-2 PN V4.5
20026 hex: CU305 PN V4.4
20030 hex: CU320-2 PN V4.4
20037 hex: CU320-2 PN V4.5
20047 hex: CU230-2 PN /CU240-2PN
20057 hex: CU250-2 PN
### p8940[0...239] CBE20 Name of Station / CBE20 Name Stat

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the station name for the Communication Board Ethernet 20 (CBE20).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual. The parameter is only valid for firmware version &quot;PROFINET Device&quot; (p8835 = 1) or &quot;Ethernet/IP&quot; (p8835 = 4). The interface configuration (p8940 and following) is activated with p8945 = 2 (becomes effective after the next POWER ON). The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>

**CU_G130_DP (PROFINET), CU_G130_PN (PROFINET), CU_G150_DP (PROFINET), CU_G150_PN (PROFINET)**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Calculated:** -  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Access level:** 3  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1

### p8941[0...3] CBE20 IP Address of Station / CBE20 IP of Stat

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the IP address for the Communication Board Ethernet 20 (CBE20).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>The parameter is only valid for firmware version &quot;PROFINET Device&quot; (p8835 = 1) or &quot;Ethernet/IP&quot; (p8835 = 4). The interface configuration (p8940 and following) is activated with p8945 = 2 (becomes effective after the next POWER ON). The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>

**CU_G130_DP (PROFINET), CU_G130_PN (PROFINET), CU_G150_DP (PROFINET), CU_G150_PN (PROFINET)**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Calculated:** -  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Access level:** 3  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1

### p8942[0...3] CBE20 Default Gateway of Station / CBE20 Def Gateway

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the default gateway for the Communication Board Ethernet 20 (CBE20).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>The parameter is only valid for firmware version &quot;PROFINET Device&quot; (p8835 = 1) or &quot;Ethernet/IP&quot; (p8835 = 4). The interface configuration (p8940 and following) is activated with p8945 = 2 (becomes effective after the next POWER ON). The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>

**CU_G130_DP (PROFINET), CU_G130_PN (PROFINET), CU_G150_DP (PROFINET), CU_G150_PN (PROFINET)**

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Calculated:** -  
**Dynamic index:** -  
**Units group:** -  
**Scaling:** -  
**Access level:** 3  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1
p8943[0...3] CBE20 Subnet Mask of Station / CBE20 Subnet Mask

**Description:**
Sets the subnet mask for the Communication Board Ethernet 20 (CBE20).

**Note:**
The parameter is only valid for firmware version "PROFINET Device" (p8835 = 1) or "Ethernet/IP" (p8835 = 4).
The interface configuration (p8940 and following) is activated with p8945 = 2 (becomes effective after the next POWER ON).
The parameter is not influenced by setting the factory setting.

**Min** | **Max** | **Factory setting**
---|---|---
0 | 255 | 0

p8944 CBE20 DHCP Mode / CBE20 DHCP Mode

**Description:**
Sets the DHCP mode for the Communication Board Ethernet 20 (CBE20).

**Note:**
The parameter is only valid for firmware version "PROFINET Device" (p8835 = 1) or "Ethernet/IP" (p8835 = 4).
The interface configuration (p8940 and following) is activated with p8945 = 2 (becomes effective after the next POWER ON).
The parameter is not influenced by setting the factory setting.

**Min** | **Max** | **Factory setting**
---|---|---
0 | 255 | 0

p8945 CBE20 interface configuration / CBE20 IF config

**Description:**
Sets the activation of the interface configuration for the Communication Board Ethernet 20 (CBE20).
p8945 is automatically set to 0 at the end of an operation.

**Value:**
0: No function
2: Save and activate configuration
3: Delete configuration

**Note:**
The parameter is only valid for firmware version "PROFINET Device" (p8835 = 1) or "Ethernet/IP" (p8835 = 4). Otherwise, it is locked.
Re p8945 = 2:
The interface configuration (p8940 and following) is saved and activated after the next POWER ON.
Re p8945 = 3:
The factory setting of the interface configuration is loaded after the next POWER ON.
List of parameters

**r8950[0...239] CBE20 Name of Station active / CBE20 name act**

<table>
<thead>
<tr>
<th>Parameter details</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the active station name for the Communication Board Ethernet 20 (CBE20).

**r8951[0...3] CBE20 IP Address of Station active / CBE20 IP act**

<table>
<thead>
<tr>
<th>Parameter details</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the active IP address for the Communication Board Ethernet 20 (CBE20).

**r8952[0...3] CBE20 Default Gateway of Station active / CBE20 def GW act**

<table>
<thead>
<tr>
<th>Parameter details</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the active standard gateway for the Communication Board Ethernet 20 (CBE20).

**r8953[0...3] CBE20 Subnet Mask of Station active / CBE20 sub mask act**

<table>
<thead>
<tr>
<th>Parameter details</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynamic index:</th>
<th>Units group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the active subnet mask for the Communication Board Ethernet 20 (CBE20).
### Parameters

#### List of parameters

1. **r8954**  
   **CBE20 DHCP Mode active / CBE20 DHCP act**  
   - Can be changed: -  
   - Calculated: -  
   - Access level: 3  
   - Data type: Unsigned8  
   - Dynamic index: -  
   - Units group: -  
   - Unit selection: -  
   - P-Group: -  
   - Scaling: -  
   - Expert list: 1  
   - Min: -  
   - Max: -  
   - Factory setting: -  
   - Description: Displays the active DHCP mode for the Communication Board Ethernet 20 (CBE20).

2. **r8955[0...5]**  
   **CBE20 MAC Address of Station / CBE20 MAC addr**  
   - Can be changed: -  
   - Calculated: -  
   - Access level: 3  
   - Data type: Unsigned8  
   - Dynamic index: -  
   - Units group: -  
   - Unit selection: -  
   - P-Group: -  
   - Scaling: -  
   - Expert list: 1  
   - Min: -  
   - Max: -  
   - Factory setting: -  
   - Description: Displays the MAC address for the Communication Board Ethernet 20 (CBE20).

3. **r8959**  
   **CBE20 DAP ID / CBE20 DAP ID**  
   - Can be changed: -  
   - Calculated: -  
   - Access level: 3  
   - Data type: Unsigned32  
   - Dynamic index: -  
   - Units group: -  
   - Unit selection: -  
   - P-Group: -  
   - Scaling: -  
   - Expert list: 1  
   - Min: -  
   - Max: -  
   - Factory setting: -  
   - Description: 
     - Displays the PROFINET Device Access Point ID (DAP ID) for PROFINET CBE20.  
     - The combination of device ID (r8909) and DAP ID uniquely identifies a PROFINET access point.  
   - Note:  
     - List of the SINAMICS DAP IDs:  
       - 20005 hex: CBE20 V4.3  
       - 20006 hex: CBE20 V4.4  
       - 20106 hex: CU310-2 PN V4.4  
       - 20206 hex: CU305 PN V4.4  
       - 20306 hex: CU320-2 PN V4.4

4. **r8960[0...2]**  
   **PN subslot controller assignment / PN subslot assign**  
   - Can be changed: -  
   - Calculated: -  
   - Access level: 3  
   - Data type: Unsigned8  
   - Dynamic index: -  
   - Units group: -  
   - Unit selection: -  
   - P-Group: -  
   - Scaling: -  
   - Expert list: 1  
   - Min: 0  
   - Max: 8  
   - Factory setting: -  
   - Description: Displays the controller assignment of a PROFINET subslot on the actual drive object.
### List of parameters

#### Index:
- [0] = Subslot 2 PROFIsafe
- [1] = Subslot 3 PZD telegram
- [2] = Subslot 4 PZD supplementary data

#### Dependency:
Refer to: r8961, r8962

#### Note:
Example:
If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

#### r8961[0...3] PN IP Address Remote Controller 1 / IP Addr Rem Ctrl1

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the IP address of the first PROFINET controller connected with the device via PN onboard.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r8962[0...3] PN IP Address Remote Controller 2 / IP Addr Rem Ctrl2

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the IP address of the second PROFINET controller connected with the device via PN onboard.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p8969 PROFIsafe wait for clock synchronization / PS wait sync

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting for the behavior of a PROFIsafe communication connection depending on another isochronous communication connection.</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Recommend.</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>1</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

#### Value:
- 0: No
- 1: Yes

#### Recommend.:
A value of 1 is recommended, if problems are encountered with the PROFIsafe connection when synchronizing.

#### Note:
- A PROFIsafe connection is only accepted if an isochronous connection exists.
- Relevant, if PROFIsafe and isochronous operation are configured via various communication connections (e.g. PROFINET Shared Device).
**Parameters**

**List of parameters**

---

**r8970[0...2]**  
**CBE20 subslot controller assignment / CBE20 subslot**

- **B_INF (PROFINET)**
- **CU_G130_DP (PROFINET)**
- **CU_G130_PN (PROFINET)**
- **CU_G150_DP (PROFINET)**
- **CU_G150_PN (PROFINET)**
- **ENC (PROFINET)**
- **TB30 (PROFINET)**
- **TM150 (PROFINET)**
- **TM31 (PROFINET)**
- **VECTOR_G (PROFINET)**

**Description:** Displays the controller assignment of a PROFINET subslot on the actual drive object.

**Index:**
- [0] = Subslot 2 PROFIsafe
- [1] = Subslot 3 PZD telegram
- [2] = Subslot 4 PZD supplementary data

**Dependency:** Refer to: r8971, r8972

**Note:**
- Example: If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

---

**r8971[0...3]**  
**CBE20 IP Address Remote Controller 1 / CBE20 IP Rem Ctrl1**

- **CU_G130_DP (PROFINET)**
- **CU_G130_PN (PROFINET)**
- **CU_G150_DP (PROFINET)**
- **CU_G150_PN (PROFINET)**

**Description:** Displays the IP address of the first PROFINET controller connected with the device via CBE20.

---

**r8972[0...3]**  
**CBE20 IP Address Remote Controller 2 / CBE20 IP Rem Ctrl2**

- **CU_G130_DP (PROFINET)**
- **CU_G130_PN (PROFINET)**
- **CU_G150_DP (PROFINET)**
- **CU_G150_PN (PROFINET)**

**Description:** Displays the IP address of the second PROFINET controller connected with the device via CBE20.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>p9206[0...2]</th>
<th>Topology direct access / Topo access</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td><strong>Can be changed:</strong> T <strong>Calculated:</strong> - <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td><strong>Dynamic index:</strong> - <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Topology</td>
<td><strong>Units group:</strong> - <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0</td>
<td>4294967295</td>
</tr>
</tbody>
</table>

**Description:** Data setting to read topology properties. The result is displayed depending on the property in r9207 or r9208.

**Re index 0:**
- 0: actual topology, 1: target topology

**Re index 1:**
- Sets the component number of the component involved.

**Re index 2:**
- 7: Name (r9208)
- 8: Component type (r9207)
- 9: Number of DRIVE-CLiQ connections (r9207)
- 11: Manufacturer (upper byte) and version (lower byte) (r9207)
- 12: Serial number (r9208)
- 13: Index (r9207)
- 15: Comparison level (r9207)
- 23: Order number (r9207)
- 24: Hardware serial number (r9208)
- 25: Collective order number (r9207)
- 28: Firmware version (r9207)
- 29: EPROM version (r9207)
- 30: Hardware version (r9207)

**Index:**
- [0] = Actual topology/target topology
- [1] = Component number
- [2] = Identifier/property

**Dependency:**
- Refer to: r9207, r9208

<table>
<thead>
<tr>
<th>r9207</th>
<th>Topology direct access integer value / Topo access int</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td><strong>Can be changed:</strong> - <strong>Calculated:</strong> - <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td><strong>Dynamic index:</strong> - <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Topology</td>
<td><strong>Units group:</strong> - <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the value for the property set in p9206.
A value is only displayed for integer type properties.

**Dependency:**
- Refer to: p9206, r9208

<table>
<thead>
<tr>
<th>r9208[0...50]</th>
<th>Topology direct access string / Topo access string</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</strong></td>
<td><strong>Can be changed:</strong> - <strong>Calculated:</strong> - <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</td>
<td><strong>Dynamic index:</strong> - <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Topology</td>
<td><strong>Units group:</strong> - <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:** Displays the value for the property set in p9206.
A value is only displayed for string type properties.
**Parameters**

**List of parameters**

**Dependency:**
Refer to: p9206, r9207

**Note:**
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

---

**p9210**

**Flashing component number / Flash comp_no.**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>499</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the component number for a component to get its status LED to flash.

**Dependency:**
Refer to: p9211

---

**p9211**

**Flash function / Flash fct.**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-1</td>
<td>1</td>
<td>-1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the function for the component selected in p9210.

After initiating a function, the parameter is automatically reset again.

Example:
- Set the component number (p9210).
- Select the "flashing on" function (set p9211 = 1).

**Value:**
-1: Select function
0: Flashing off
1: Flashing on

**Dependency:**
Refer to: p9210

**Notice:**
If a task cannot be executed (e.g. the component number in p9210 does not exist), the following applies:
- There is no negative feedback signal.
- The value is reset anyway.

---

**p9300**

**SI Motion monitoring clock cycle (Motor Module) / SI Mtn clock MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>500.00 [µs]</td>
<td>25000.00 [µs]</td>
<td>12000.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the monitoring clock cycle for safe motion monitoring.

**Dependency:**
Refer to: p9500, p9511

Refer to: F01652

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
The monitoring clock cycle must be a multiple of the actual value sensing clock cycle in p9311 or of the DP clock cycle.

A change only becomes effective after a POWER ON.
### p9301  
**SI Motion enable safety functions (Motor Module) / SI Mtn enable MM**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable SOS/SLS</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Enable SLP</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Enable actual value synchronization</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Enable absolutely limited position</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Enable SSM hysteresis and filtering</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>Enable SSM threshold limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p9501
- Refer to: F01682, F01683

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
- A change only becomes effective after a POWER ON.
- SDI: Safe Direction (safe motion direction)
- SLP: Safely-Limited Position
- SLS: Safely-Limited Speed
- SOS: Safe Operating Stop
- SP: Safe Position
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

### p9302  
**SI Motion axis type (Motor Module) / SI Mtn AxisType MM**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>01</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>02</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>03</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>04</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>05</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>06</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>07</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>08</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>09</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>10</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>11</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>12</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>13</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>14</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>15</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>16</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>17</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>18</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>19</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>20</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>21</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>22</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>23</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>24</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>25</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p9502

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
- For the commissioning software, after changing over the axis type, the units dependent on the axis type are only updated after a project upload.
- A change only becomes effective after a POWER ON.
Parameters

Description:
Sets the modulo value in degrees for rotary axes of the "Safe position" function.
This modulo value is taken into account when safely referencing as well as when transferring the safe position via PROFIsafe when the absolute position is enabled.
The modulo function is deactivated for a value = 0.

Dependency:
Refer to: F01681

Notice:
When the "SLP" function is activated, the modulo function must be deactivated as otherwise fault F30681 will be output.
If the absolute position is not enabled, then the parameterized modulo value is not taken into account.
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
SLP: Safely-Limited Position
SP: Safe Position

Description:
Sets the function specification for the safe motion monitoring.

Value:
0: Safety with encoder and accel_monitoring(SAM) / delay time
1: Safety without encoder and braking ramp(SBR)
3: Safety without encoder with accel_monitoring(SAM) / delay time

Dependency:
Refer to: C30711

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Description:
Sets the function configuration for the safe motion monitoring functions.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Extended message acknowledgement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Setpoint velocity limit for STOP F</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Motor type sensorless actual value sensing</td>
<td>Synchronous motor</td>
<td>Induction motor</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>SS1 drive-based braking response</td>
<td>without OFF3</td>
<td>with OFF3</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: C01711

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
Re bit 00:
When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.
Re bit 01:
When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.
Re bit 02:
This bit defines the type of motor, which the sensorless safety technology evaluates.
For bit = 0, the sensorless motion monitoring function calculates the actual velocity for an induction motor.
For bit = 1, an actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.
Bit = 0 should be set if no motor is defined (p0300 = 0).
Re bit 03:
When the function is activated, the drive-based braking response (OFF3 ramp) after SS1/internal STOP B is deac-
tivated. Braking monitoring (SBR, SAM) is also deactivated.

p9309  SI Motion behavior during pulse suppression (Motor Module) / SI Mtn behav IL MM

<table>
<thead>
<tr>
<th>Vector</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-0000 0000 1111 1111 bin</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

**Dependency:**
Refer to: C01711

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Re bit 00:
If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

**Note:**
SDI: Safe Direction (safe motion direction)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

Re bit 01:
For bit = 1 and with the SSM safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the feedback signal has a 0 signal level.
For bit = 0 and with the SSM safety function activated, the following applies:
- Monitoring continues during pulse suppression. The feedback signal last displayed before pulse suppression is kept and the system goes into the STO state.

Re bit 08:
For bit = 1 and with the SDI safety function activated, the following applies:
- During pulse suppression, monitoring is switched off and the status signal indicates inactive.
For bit = 0 and with the SDI safety function activated, the following applies:
- Monitoring continues during pulse suppression. The status signal indicates active and the system goes into the STO state.

p9311  SI Motion actual value sensing clock cycle (Motor Module) / SI Mtn act clk MM

<table>
<thead>
<tr>
<th>Vector</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0000 [µs]</td>
<td>25000.0000 [µs]</td>
<td>0.0000 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the clock cycle time of the actual value sensing for safe motion monitoring.
Setting criteria if the motion monitoring functions are executed with an encoder:
- A slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing.
- The maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730.
- The isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used.

Setting criteria if the motion monitoring functions are executed without an encoder:
- The actual value sensing clock cycle must be set to the same value as the current controller clock cycle (p0115).

Dependency:
Refer to: p0115, p9300, p9511
Refer to: F01652

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
The parameter is only active for drive-based motion monitoring functions (p9801.2 = 1).
The monitoring clock cycle from p9300 must be an integer multiple of this parameter.
In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended.
The clock cycle time of the actual value sensing should not be set to more than 8 ms.
A change only becomes effective after a POWER ON.

**p9312**
Select SI Motion safety functions without selection (MM) / SI Mtn w/o sel MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>0000 0000 0001 0000 bin</td>
</tr>
</tbody>
</table>

Description:
Sets the safety functions without selection.
The safety functions without selection are enabled with p9601.5/p9801.5.
Using this parameter, the individual motion monitoring functions can then be selected (e.g. SLS, SDI positive, SDI negative), which should then be permanently selected.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>SLS static (MM)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>SDI positive static (MM)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>SDI negative static (MM)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p9601, p9801
Refer to: F01682, F30682

Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

Note:
A change becomes immediately effective after exiting the safety commissioning mode.
SDI: Safe Direction (safe motion direction).
SLS: Safely-Limited Speed

**p9313**
SI Motion non safety-relevant measuring steps POS1 (MM) / nsrPOS1 MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
<td>4294967295 22000</td>
</tr>
</tbody>
</table>

Description:
Sets the non safety-relevant measuring steps of position value POS1.
The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

Dependency:
Refer to: p9513
**p9314**  
**SI Motion absolute encoder linear measuring steps (MM) / EncLinMeasStep MM**

**Vector_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0 [nm]  
4294967295 [nm]

**Max**  
100 [nm]

**Description:**  
Sets the resolution of the absolute position for a linear absolute encoder.

The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

**Dependency:**  
Refer to: p9514

---

**p9315**  
**SI Motion coarse position value configuration (Motor Module) / SI Mtn s config MM**

**Vector_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
-  
-  
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 bin

**Max**  
-  
-  
0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 bin

**Description:**  
Sets the encoder configuration for the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

**Bit field:**  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Incrementer</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Encoder CRC least significant byte first</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Redundant coarse position val. most significant bit left-aligned</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Binary comparison not possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DRIVE-CLiQ encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: r0474, p9515

---

**p9316**  
**SI Motion encoder configuration, safety functions (Motor Module) / SI Mtn enc_cfg MM**

**Vector_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** Unsigned16  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
-  
-  
0000 bin

**Max**  
-  
-  
0000 bin

**Description:**  
Sets the configuration for the encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

**Bit field:**  
<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Encoder rotating/linear</td>
<td>Linear</td>
<td>Rotating:</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Position actual value, sign change</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**  
Refer to: p0404, p0410, p9516
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9317</td>
<td>Sets the grid division for a linear encoder.</td>
<td>Refer to: p0407, p9316</td>
<td>For safety functions that have not been enabled (p9301 = 0), the following applies: When booting, p9319 is automatically set the same as p0418.</td>
</tr>
<tr>
<td>p9318</td>
<td>Sets the number of encoder pulses per revolution for rotary encoders.</td>
<td>Refer to: p0408, p9316</td>
<td>For safety functions that are enabled (p9301 &gt; 0), the following applies: p9319 is checked for agreement with p0418. G1_XIST1: Encoder 1 position actual value 1 (PROFIdrive)</td>
</tr>
<tr>
<td>p9319</td>
<td>Sets the fine resolution for G1_XIST1 in bits.</td>
<td>Refer to: p0418</td>
<td>For safety functions that have not been enabled (p9301 = 0), the following applies: When booting, p9319 is automatically set the same as p0418.</td>
</tr>
<tr>
<td>p9320</td>
<td>Sets the gear ratio between the encoder and load in mm/revolution for a linear axis with rotary encoder.</td>
<td></td>
<td>For safety functions that are enabled (p9301 &gt; 0), the following applies: p9319 is checked for agreement with p0418. G1_XIST1: Encoder 1 position actual value 1 (PROFIdrive)</td>
</tr>
</tbody>
</table>

**Description:**
- **SI Motion linear scale grid division (Motor Module) / SI Mtn grid MM**
- **SI Motion encoder pulses per revolution (Motor Module) / SI Mtn p/rev MM**
- **SI Motion fine resolution G1_XIST1 (Motor Module) / SI Mtn G1_XIST1 MM**
- **SI Motion spindle pitch (Motor Module) / SI Mtn sp_pitch MM**
**Dependency:**
Refer to: p9520

**Notice:**
The fourth decimal point can be rounded-off depending on the size of the entered number (from 3 places before the decimal point).

<table>
<thead>
<tr>
<th>p9321[0...7]</th>
<th>SI Motion gearbox encoder (motor)/load denom (Motor Module) / SI Mtn gearDenomMM</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95) Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max                                      Factory setting</td>
</tr>
<tr>
<td>1</td>
<td>2147000000 1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the denominator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.

**Index:**

- [0] = Gearbox 1
- [1] = Gearbox 2
- [3] = Gearbox 4
- [7] = Gearbox 8

**Dependency:**
Refer to: p9322

**Notice:**
It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

<table>
<thead>
<tr>
<th>p9322[0...7]</th>
<th>SI Motion gearbox encoder (motor)/load numerator (Motor Module) / SI Mtn gear num MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95) Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated Units group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max                                      Factory setting</td>
</tr>
<tr>
<td>1</td>
<td>2147000000 1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the numerator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.

**Index:**

- [0] = Gearbox 1
- [1] = Gearbox 2
- [3] = Gearbox 4
- [7] = Gearbox 8

**Dependency:**
Refer to: p9321

**Notice:**
It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

**Note:**
In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

**Example:**
Gearbox ratio 1:4, pole pair number (r0313) = 2

--> p9321 = 1, p9322 = 8 (4 x 2)
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9323</td>
<td>SI Motion redundant coarse position value valid bits (Motor Module) / Valid bits MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the number of valid bits of the redundant coarse position value. The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.</td>
<td>Refer to: r0470, p9523</td>
<td></td>
</tr>
<tr>
<td>p9324</td>
<td>SI Motion redundant coarse pos. value fine resolution bits (MM) / SI Mtn fine bit MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-16</td>
<td>16</td>
<td>-2</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the number of valid bits for the fine resolution of the redundant coarse position value. The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.</td>
<td>Refer to: p0471, p9524</td>
<td></td>
</tr>
<tr>
<td>p9325</td>
<td>SI Motion redundant coarse pos. value relevant bits (MM) / Relevant bits MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the number of relevant bits for the redundant coarse position value. The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.</td>
<td>Refer to: p0414, r0472, p9525</td>
<td></td>
</tr>
<tr>
<td>p9326</td>
<td>SI Motion encoder assignment (Motor Module) / SI Mtn encoder MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
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<td>Access level: 3</td>
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<td>Func. diagram: -</td>
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<tr>
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<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the number of the encoder, which is used on the Motor Module for safe motion monitoring functions.</td>
<td>For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1). Refer to: p0187, p0188, p0189, p0430, p9526</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Notice:</strong> This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>For p9326 = 1 the following applies: Motor Module uses an encoder for closed-loop speed control, it involves a 1-encoder system.</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9328[0...11]</td>
<td>SI Motion Sensor Module Node Identifier (Motor Module) / SI Mtn SM Ident MM</td>
<td>Sets the node identifier of the Sensor Module that is used by the Motor Module for the motion monitoring functions.</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
</tr>
<tr>
<td>p9329</td>
<td>SI Motion Gx_XIST1 coarse pos safe most significant bit (MM) / Gx_XIST1 MSB MM</td>
<td>Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position. The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.</td>
<td>MSB: Most Significant Bit</td>
</tr>
<tr>
<td>p9330</td>
<td>SI Motion standstill tolerance (Motor Module) / SI Mtn SOS Tol MM</td>
<td>Sets the tolerance for the function &quot;Safe Operating Stop&quot; (SOS).</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
</tr>
<tr>
<td>p9330</td>
<td>SI Motion standstill tolerance (Motor Module) / SI Mtn SOS Tol MM (Safety rot)</td>
<td>Sets the tolerance for the function &quot;Safe Operating Stop&quot; (SOS).</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the node identifier of the Sensor Module that is used by the Motor Module for the motion monitoring functions.
- Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.
- Sets the tolerance for the function "Safe Operating Stop" (SOS).

**Dependency:**
- Refer to: r9881
- Refer to: p0415, r0475, p9529
- Refer to: C01707
- Refer to: p9530

**Notice:**
- This parameter is overwritten by the copy function of the safety functions integrated in the drive.
### p9331[0...3] SI Motion SLS limit values (Motor Module) / SI Mtn SLS lim MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [mm/min]</td>
<td>100000.00 [mm/min]</td>
<td>2000.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the limit values for the function "Safely-Limited Speed" (SLS).

**Index:**
- [0] = Limit value SLS1
- [1] = Limit value SLS2
- [2] = Limit value SLS3
- [3] = Limit value SLP4

**Dependency:**
Refer to: p9363, p9531
Refer to: C01714

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SLS: Safely-Limited Speed

### p9334[0...1] SI Motion SLP upper limit values (Motor Module) / SI Mtn SLP uplimMM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2822</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-2147000.000 [mm]</td>
<td>2147000.000 [mm]</td>
<td>100000.000 [mm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the upper limit for the function "Safely-Limited Position" (SLP).

**Index:**
- [0] = Limit value SLP1 (SE1)
- [1] = Limit value SLP2 (SE2)

**Dependency:**
Refer to: p9501, p9535, p9562
Refer to: C01714

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For setting this limit value, the following applies: p9334[x] > p9335[x], x = 0, 1
A change only becomes effective after a POWER ON.
SLP: Safely-Limited Position / SE: Safe software limit switches
p9334[0...1]  |  SI Motion SLP upper limit values (Motor Module) / SI Mtn SLP uplimMM
---|---
**VECTOR_G** (Safety rot)  |  Can be changed: C2(95)  |  Calculated: -  |  Access level: 3
**Data type:** FloatingPoint32  |  Dynamic index: -  |  Func. diagram: 2822
**P-Group:** Safety Integrated  |  Units group: -  |  Unit selection: -
**Not for motor type:** -  |  Scaling: -  |  Expert list: 1
**Min**  |  -2147000.000 [°]  |  Factory setting
**Max**  |  2147000.000 [°]  |  100000.000 [°]
**Description:**
Sets the upper limit for the function "Safety-Limited Position" (SLP).

**Index:**
- [0] = Limit value SLP1 (SE1)
- [1] = Limit value SLP2 (SE2)

**Dependency:**
Refer to: p9501, p9535, p9562
Refer to: C01715

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For setting this limit value, the following applies: p9334[x] > p9335[x], x = 0, 1
A change only becomes effective after a POWER ON.
SLP: Safety-Limited Position / SE: Safe software limit switches

p9335[0...1]  |  SI Motion SLP lower limit values (Motor Module) / SI Mtn SLPLowLimMM
---|---
**VECTOR_G**  |  Can be changed: C2(95)  |  Calculated: -  |  Access level: 3
**Data type:** FloatingPoint32  |  Dynamic index: -  |  Func. diagram: 2822
**P-Group:** Safety Integrated  |  Units group: -  |  Unit selection: -
**Not for motor type:** -  |  Scaling: -  |  Expert list: 1
- **Min**  |  -2147000.000 [mm]  |  Factory setting
- **Max**  |  2147000.000 [mm]  |  -100000.000 [mm]
**Description:**
Sets the lower limit for the function "Safety-Limited Position" (SLP).

**Index:**
- [0] = Limit value SLP1 (SE1)
- [1] = Limit value SLP2 (SE2)

**Dependency:**
Refer to: p9501, p9534, p9562
Refer to: C01715

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
For setting this limit value, the following applies: p9334[x] > p9335[x], x = 0, 1
A change only becomes effective after a POWER ON.
SLP: Safety-Limited Position / SE: Safe software limit switches
**Example Parameters**

**Description:** Sets the comparison algorithm for the encoder position monitoring functions. The encoder that is used for the safe motion monitoring functions on the Motor Module must be parameterized in this parameter.

**Value:**
- 0: SMx20 safety algorithm
- 10: DQL binary safety algorithm
- 11: DQL linear non-binary safety algorithm
- 255: Safety algorithm unknown

**Dependency:** Refer to: p9541

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:** For a linear axis, the tolerance is internally limited to 10 mm. For a "linear axis with rotating motor" and standard setting of p9320, p9321 and p9322, the standard setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.

**Example Parameters**

**Description:** Sets the tolerance for the crosswise data comparison of the actual position between the two monitoring channels. For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary and 1 mm linear).

**Dependency:** Refer to: p9542

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:** For a linear axis, the tolerance is internally limited to 10 mm. For a "linear axis with rotating motor" and standard setting of p9320, p9321 and p9322, the standard setting of p9342 corresponds to a position tolerance of 36 ° on the motor side.
### List of parameters

#### p9344: SI Motion actual value comparison tolerance (referencing) (MM) / SI mtn ref tol MM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9344</td>
<td>Sets the tolerance to check the actual values after referencing (incremental encoder) or when powering up (absolute encoder).</td>
<td>Refer to: C01711</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>A change only becomes effective after a POWER ON.</td>
<td>0.0000 [mm] to 36.0000 [mm]</td>
</tr>
</tbody>
</table>

#### p9345: SI Motion SSM filter time (Motor Module) / SI Mtn SSM filt MM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9345</td>
<td>Sets the filter time for the SSM feedback signal to detect standstill.</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>The filter time is effective only if the function is enabled (p9301.16 = p9501.16 = 1).</td>
<td>The parameter is included in the crosswise data comparison of the two monitoring channels. SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)</td>
<td>0.00 [µs] to 100000.00 [µs]</td>
</tr>
</tbody>
</table>

#### p9346: SI Motion SSM velocity limit (Motor Module) / SI Mtn SSM v_limMM

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9346</td>
<td>Sets the velocity limit for the SSM feedback signal to detect standstill (n &lt; nx). When this limit value is undershot, the signal &quot;SSM feedback signal active&quot; is set.</td>
<td>Refer to: p9546</td>
<td>For p9368 = p9568 = 0 the value in p9346/p9546 is also applicable for the function &quot;SAM&quot;.</td>
<td></td>
<td>0.00 [mm/min] to 1000000.00 [mm/min]</td>
</tr>
</tbody>
</table>
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9346</td>
<td>SI Motion SSM velocity limit (Motor Module) / SI Mtn SSM v_limMM</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>0.00 [rpm]</td>
</tr>
<tr>
<td>p9347</td>
<td>SI Motion SSM velocity hysteresis (Motor Module) / SI Mtn SSM Hyst MM</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>0.0010 [mm/min]</td>
</tr>
</tbody>
</table>
### p9348
**SI Motion SAM actual velocity tolerance (Motor Module) / SI Mtn SAM tol MM**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
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<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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</tr>
<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [mm/min]</td>
<td>120000.00 [mm/min]</td>
<td>300.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the velocity tolerance for the "SAM" function.

**Dependency:**
Refer to: p9548
Refer to: C01706

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SAM: Safe Acceleration Monitor (safe acceleration monitoring)

### p9349
**SI Motion slip velocity tolerance (Motor Module) / SI Mtn slip MM**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [mm/min]</td>
<td>6000.00 [mm/min]</td>
<td>6.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the velocity tolerance that is used for a 2-encoder system in crosswise comparison between the two monitoring channels.

**Dependency:**
Refer to: p9301, p9342, p9549

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
If the "actual value synchronization" is not enabled (p9301.3 = 0), then the value parameterized in p9342 is used as tolerance in the crosswise data comparison.

### p9349
**SI Motion slip velocity tolerance (Motor Module) / SI Mtn slip MM** (Safety rot)

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
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<td>Func. diagram: -</td>
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<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>6000.00 [rpm]</td>
<td>6.00 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the velocity tolerance that is used for a 2-encoder system in crosswise comparison between the two monitoring channels.

**Dependency:**
Refer to: p9301, p9342, p9549

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.
### Parameters

#### List of parameters

**Note:**
If the "actual value synchronization" is not enabled (p9301.3 = 0), then the value parameterized in p9342 is used as
tolerance in the crosswise data comparison.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9351</td>
<td><strong>SI Motion SLS changeover delay time (Motor Module) / SI Mtn SLS t MM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
<td>Func. diagram: 2825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for the SLS changeover or for the changeover from SLS to SOS for the function "Safely-Limited Speed" (SLS). When transitioning from a higher to a lower safely-limited velocity/speed stage or to the safe operating stop (SOS), within this delay time, the "old" velocity stage remains active. Even if SLS or SOS is activated from non safety-related operation, then this delay is still applied.

**Dependency:** Refer to: p9551

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SLS: Safely-Limited Speed
SOS: Safe Operating Stop

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9352</td>
<td><strong>SI Motion transition time STOP C to SOS (Motor Module) / SI Mtn t C-&gt;SOS MM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95)</td>
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<td></td>
<td></td>
</tr>
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<td></td>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
<td>Func. diagram: 2825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the transition time from STOP C to "Safe Operating Stop" (SOS). When transitioning from a higher to a lower safely-limited velocity/speed stage or to the safe operating stop (SOS), within this delay time, the "old" velocity stage remains active. Even if SLS or SOS is activated from non safety-related operation, then this delay is still applied.

**Dependency:** Refer to: p9552

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SOS: Safe Operating Stop

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9353</td>
<td><strong>SI Motion transition time STOP D to SOS (Motor Module) / SI Mtn t D-&gt;SOS MM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95)</td>
<td></td>
<td></td>
<td></td>
</tr>
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<tr>
<td>P-Group: Safety Integrated</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
<td>Func. diagram: 2825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the transition time from STOP D to "Safe Operating Stop" (SOS). When transitioning from a higher to a lower safely-limited velocity/speed stage or to the safe operating stop (SOS), within this delay time, the "old" velocity stage remains active. Even if SLS or SOS is activated from non safety-related operation, then this delay is still applied.

**Dependency:** Refer to: p9553

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SOS: Safe Operating Stop

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9354</td>
<td><strong>SI Motion transition time STOP E to SOS (Motor Module) / SI Mtn t E-&gt;SOS MM</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VECTOR_G</td>
<td>Can be changed: C2(95)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Units group: -</td>
<td>Func. diagram: 2825</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the transition time from STOP E to "Safe Operating Stop" (SOS). When transitioning from a higher to a lower safely-limited velocity/speed stage or to the safe operating stop (SOS), within this delay time, the "old" velocity stage remains active. Even if SLS or SOS is activated from non safety-related operation, then this delay is still applied.

**Dependency:** Refer to: p9554
### List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9355</td>
<td>SI Motion transition time STOP F to STOP B (Motor Module) / SI Mtn t F-&gt;B MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p9356</td>
<td>SI Motion pulse suppression delay time (Motor Module) / SI Mtn IL t_del MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p9357</td>
<td>SI Motion pulse suppression test time (Motor Module) / SI Mtn IL t MM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p9358</td>
<td>SI Motion acceptance test mode time limit (Motor Module) / SI Mtn acc t MM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
- SOS: Safe Operating Stop
- SS1: Safe Stop 1

---

**p9355**

**Description:** Sets the transition time from STOP F to STOP B. 
**Dependency:** Refer to: C01711

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9355</td>
<td>SI Motion transition time STOP F to STOP B (Motor Module) / SI Mtn t F-&gt;B MM</td>
<td>C2(95)</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>Safety Integrated</td>
<td>-</td>
<td>0.00 [µs]</td>
<td>600000000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:** Sets the transition time from STOP F to STOP B.

**Dependency:** Refer to: C01711

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

**p9356**

**Description:** Sets the delay time for the safe pulse suppression after STOP B / SS1. 
In the case of encoderless motion monitoring functions with safe brake ramp monitoring (p9306 = 1) and the OFF3 ramp enabled at the same time (p9507.3 = 0), the parameter has no effect.

**Dependency:** Refer to: p9360, p9556
Refer to: C01701

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9356</td>
<td>SI Motion pulse suppression delay time (Motor Module) / SI Mtn IL t_del MM</td>
<td>C2(95)</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>Safety Integrated</td>
<td>-</td>
<td>0.00 [µs]</td>
<td>360000000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for the safe pulse suppression after STOP B / SS1. 
In the case of encoderless motion monitoring functions with safe brake ramp monitoring (p9306 = 1) and the OFF3 ramp enabled at the same time (p9507.3 = 0), the parameter has no effect.

**Dependency:** Refer to: p9360, p9556
Refer to: C01701

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

**p9357**

**Description:** Sets the time after which the pulses must have been suppressed when initiating the test stop.

**Dependency:** Refer to: p9557
Refer to: C01798

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Data type:</th>
<th>P-Group:</th>
<th>Not for motor type:</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9357</td>
<td>SI Motion pulse suppression test time (Motor Module) / SI Mtn IL t MM</td>
<td>C2(95)</td>
<td>-</td>
<td>FloatingPoint32</td>
<td>Safety Integrated</td>
<td>-</td>
<td>0.00 [µs]</td>
<td>10000000.00 [µs]</td>
</tr>
</tbody>
</table>

**Description:** Sets the time after which the pulses must have been suppressed when initiating the test stop.

**Dependency:** Refer to: p9557
Refer to: C01798

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.

---

**p9358**

**Description:** Sets the maximum time for the acceptance test mode.
If the acceptance test mode takes longer than the selected time limit, then the mode is automatically terminated.

**Dependency:** Refer to: p9558
Refer to: C01799

**Notice:** This parameter is overwritten by the copy function of the safety functions integrated in the drive.
### List of parameters

#### p9360
**SI Motion pulse suppression shutdown velocity (Motor Module) / SI Mtn IL v_sh MM**

<table>
<thead>
<tr>
<th>VECTOG</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [mm/min]</td>
<td>6000.00 [mm/min]</td>
<td>0.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the shutdown velocity for pulse suppression. Below this velocity "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A). In the case of encoderless motion monitoring functions, the parameter must be > 0 (recommended value: 10).

**Dependency:**
Refer to: p9356, p9560

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SS1: Safe Stop 1

#### p9360
**SI Motion pulse suppression shutdown speed (Motor Module) / SI Mtn IL n_sh MM**

<table>
<thead>
<tr>
<th>VECTOG (Safety rot)</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>6000.00 [rpm]</td>
<td>0.00 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the shutdown speed for the pulse suppression. Below this speed "standstill" is assumed and for STOP B / SS1, the pulses are suppressed (by changing to STOP A).

**Dependency:**
Refer to: p9356, p9560

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SS1: Safe Stop 1

#### p9362[0...1]
**SI Motion SLP stop response (Motor Module) / SI mtn SLP stop MM**

<table>
<thead>
<tr>
<th>VECTOG</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the stop response for the function "Safety-Limited Position" (SLP).

**Value:**
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed pulse suppression when the bus fails
11: STOP B with delayed pulse suppression when the bus fails
12: STOP C with delayed pulse suppression when the bus fails
13: STOP D with delayed pulse suppression when the bus fails
14: STOP E with delayed pulse suppression when the bus fails

**Index:**
[0] = Limit value SLP1 (SE1)
[1] = Limit value SLP2 (SE2)

**Dependency:**
Refer to: p9534, p9535

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SLP: Safely-Limited Position
**Parameters**

**List of parameters**

---

### p9363[0...3]

**SI Motion SLS stop response (Motor Module) / SI Mtn SLS Stop MM**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>14</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the stop response for the function "Safely-Limited Speed" (SLS).
These settings apply to the individual limit values for SLS.
In the case of encoderless motion monitoring (p9306 = 1), only a value of 0 or 1 is permitted.

**Value:**
- 0: STOP A
- 1: STOP B
- 2: STOP C
- 3: STOP D
- 4: STOP E
- 10: STOP A with delayed pulse suppression when the bus fails
- 11: STOP B with delayed pulse suppression when the bus fails
- 12: STOP C with delayed pulse suppression when the bus fails
- 13: STOP D with delayed pulse suppression when the bus fails
- 14: STOP E with delayed pulse suppression when the bus fails

**Index:**
- [0] = Limit value SLS1
- [1] = Limit value SLS2
- [2] = Limit value SLS3
- [3] = Limit value SLP4

**Dependency:**
Refer to: p9331, p9380, p9563

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

---

### p9364

**SI Motion SDI tolerance (Motor Module) / SI Mtn SDI tol MM**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2861</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.001 [mm]</td>
<td>360.000 [mm]</td>
<td>12.000 [mm]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance for the function "Safe motion direction" (SDI).
This motion in the monitored direction is still permissible before safety message C30716 is initiated.

**Dependency:**
Refer to: p9365, p9366
Refer to: C30716

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SDI: Safe Direction (safe motion direction)

---

### p9364

**SI Motion SDI tolerance (Motor Module) / SI Mtn SDI tol MM**

<table>
<thead>
<tr>
<th>VECTOR_G (Safety rot)</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2861</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.001 [']</td>
<td>360.000 [']</td>
<td>12.000 [']</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance for the function "Safe motion direction" (SDI).
This motion in the monitored direction is still permissible before safety message C30716 is initiated.
### p9365
**SI Motion SDI delay time (Motor Module) / SI Mtn SDI t MM**

**VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Min:** 0.00 [µs]
- **Max:** 600000000.00 [µs]
- **Access level:** 3

**Description:**
Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

**Dependency:**
Refer to: p9364, p9365

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SDI: Safe Direction (safe motion direction)

```
min Max Factory setting
0.00 [µs] 600000000.00 [µs] 100000.00 [µs]
```

### p9366
**SI Motion SDI stop response (Motor Module) / SI Mtn SDI Stop MM**

**VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** Integer16
- **P-Group:** Safety Integrated
- **Min:** 0
- **Max:** 14
- **Access level:** 3

**Description:**
Sets the stop response for the function "Safe motion direction" (SDI). This setting applies to both directions of motion.

In the case of encoderless motion monitoring (p9306 = 1), only a value of 0 or 1 is permitted.

**Value:**
0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed pulse suppression when the bus fails
11: STOP B with delayed pulse suppression when the bus fails
12: STOP C with delayed pulse suppression when the bus fails
13: STOP D with delayed pulse suppression when the bus fails
14: STOP E with delayed pulse suppression when the bus fails

**Dependency:**
Refer to: p9364, p9365

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)

### p9368
**SI Motion SAM velocity limit (Motor Module) / SI Mtn SAM v_limitMM**

**VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Min:** 0.00 [mm/min]
- **Max:** 1000.00 [mm/min]
- **Access level:** 3

**Description:**
Sets the velocity tolerance limit for the "SAM" function.

```
0.00 [mm/min] 1000.00 [mm/min] 0.00 [mm/min]
```
SAM is de-activated once the set velocity limit has been undershot.

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)  
For p9568 = p9368 = 0, the following applies:  
The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

### p9368  
**SI Motion SAM velocity limit (Motor Module) / SI Mtn SAM v_limMM**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>C2(95)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: 0.00 [rpm]  
**Max**: 1000.00 [rpm]  
**Factory setting**: 0.00 [rpm]

**Description:**
Sets the velocity tolerance limit for the "SAM" function.

**Notice:**
SAM is de-activated once the set velocity limit has been undershot.

**Note:**
SAM: Safe Acceleration Monitor (safe acceleration monitoring)  
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)  
For p9568 = p9368 = 0, the following applies:  
The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

### p9370  
**SI Motion acceptance test mode (Motor Module) / SI Mtn acc_mod MM**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: 0000 hex  
**Max**: 00AC hex  
**Factory setting**: 0000 hex

**Description:**
Setting to select and de-select the acceptance test mode.

**Value:**
0: [00 hex] De-select the acceptance test mode  
172: [AC hex] Select the acceptance test mode

**Dependency:**
Refer to: p9358, r9371  
Refer to: C01799

**Note:**
Acceptance test mode can only be selected if the motion monitoring functions, which are integrated in the drives, are enabled (p9601.2/p9801.2).

### r9371  
**SI Motion acceptance test status (Motor Module) / SI Mtn acc_stat MM**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: 0000 hex  
**Max**: 00AC hex  
**Factory setting**: 0000 hex

**Description:**
Displays the status of the acceptance test mode.

**Value:**
0: [00 hex] Acc_mode inactive  
12: [0C hex] Acc_mode not possible due to POWER ON fault  
13: [0D hex] Acc_mode not possible due to incorrect ID in p9370  
15: [0F hex] Acc_mode not possible due to expired Acc_timer  
172: [AC hex] Acc_mode active

**Dependency:**
Refer to: p9358, p9370  
Refer to: C01799
### p9374
**SI Motion safe position scaling (Motor Module) / SI mtn SP scal MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9374</td>
<td>Sets the scaling factor to transfer the safe position via PROFIsafe in the 16-bit notation.</td>
<td>Refers to: r9713</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>By selecting a suitable scaling of the 32 bit position actual value (r9713[0]), it must be ensured that the scaled position actual value is not greater than 16 bit. The scaling is realized by dividing r9713[0] with this scaling factor. If, during operation, a position actual value is determined, which cannot be scaled to the 16 bits, then message C30711 with value 7001 is output and safety stop response STOP F.</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>Max</td>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

### p9380
**SI Motion pulse suppression delay bus failure (Motor Module) / SI Mtn t to IL MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9380</td>
<td>Sets the delay time after which the pulses are safely suppressed after a bus failure.</td>
<td>Refers to: p9363</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F). The main use of the wait time is the ESR function (Extended Stop and Retract).</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [µs]</td>
<td>Max</td>
<td>800000 [µs]</td>
<td>0.00 [µs]</td>
</tr>
</tbody>
</table>

### p9381
**SI Motion brake ramp reference value (Motor Module) / SI Mtn ramp ref MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9381</td>
<td>Sets the reference value to define the brake ramp.</td>
<td>Refers to: p9382, p9383</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).</td>
</tr>
<tr>
<td>Min</td>
<td>600.0000 [mm/min]</td>
<td>Max</td>
<td>240000.0000 [mm/min]</td>
<td>1500.0000 [mm/min]</td>
</tr>
</tbody>
</table>

### p9381
**SI Motion brake ramp reference value (Motor Module) / SI Mtn ramp ref MM (Safety rot)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9381</td>
<td>Sets the reference value to define the brake ramp.</td>
<td>Refers to: p9382, p9383</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).</td>
</tr>
<tr>
<td>Min</td>
<td>600.0000 [rpm]</td>
<td>Max</td>
<td>240000.0000 [rpm]</td>
<td>1500.0000 [rpm]</td>
</tr>
</tbody>
</table>
Notice: This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### p9382  SI Motion brake ramp delay time (Motor Module) / SI Mtn rp t_del MM

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min: 1000.00 [us]  
Max: 99000000.00 [us]  
Factory setting: 250000.00 [us]

**Description:**  
Sets the delay time for monitoring the brake ramp.  
Monitoring of the brake ramp starts once the delay time has elapsed.

**Dependency:**  
Refer to: p9381, p9383

**Notice:**  
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### p9383  SI Motion brake ramp monitoring time (Motor Module) / SI Mtn rp t_mon MM

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min: 500.00 [ms]  
Max: 3600000.00 [ms]  
Factory setting: 10000.00 [ms]

**Description:**  
Sets the monitoring time to define the brake ramp.  
The rate of rise of the brake ramp depends upon p9381 (reference value) and p9383 (monitoring time).

**Dependency:**  
Refer to: p9381, p9382

**Notice:**  
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### p9385  SI Motion fault tolerance actual value sensing sensorless (MM) / SI mtn Sl to sl MM

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: Integer32  
Dynamic index: -  
Func. diagram: -  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min: -1  
Max: 4  
Factory setting: -1

**Description:**  
Sets the tolerance of the plausibility monitoring of the current and voltage angle.  
p9385 = 4 must be parameterized for synchronous motors.

**Dependency:**  
Refer to: p9507  
Refer to: C01711, F30681

**Notice:**  
This parameter is overwritten by the copy function of the safety functions integrated in the drive.  
Reducing this value can adversely affect the actual value sensing and the plausibility check.  
When the value is increased, this results in a longer evaluation delay.

**Note:**  
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).  
For a value of -1, for synchronous motors, the value 4 is used automatically for the calculation – and for induction motors, the value 0.

### p9386  SI Motion delay time of the evaluation sensorless (MM) / SI Mtn t_del SL MM

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min: 5.00 [ms]  
Max: 1000.00 [ms]  
Factory setting: 100.00 [ms]

**Description:**  
Sets the evaluation delay for encoderless actual value sensing after pulse enable.  
The value should be greater than or equal to the motor magnetizing time.
### Dependency:
Refer to: C30711

### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C30711 with the message value 1041 or 1042.

When the value is increased, this results in a longer evaluation delay.

### Note:
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

#### p9387  
**SI Motion act val sensing encoderless filter time (Motor Module) / SI Mtn SL filt MM**

**VECTOR_G**  
**Can be changed:** C2(95)  
**Data type:** FloatingPoint32  
**P-Group:** Safety Integrated  
**Not for motor type:** -  
**Min** 0.00 [µs]  
**Max** 100000.00 [µs]  
**Factory setting** 25000.00 [µs]

### Description:
Sets the filter time for smoothing the actual value with sensorless actual value sensing.

### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### Note:
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

#### p9388  
**SI Motion act val sensing encoderless min current (Motor Module) / SI Mtn SL _min MM**

**VECTOR_G**  
**Can be changed:** C2(95)  
**Data type:** FloatingPoint32  
**P-Group:** Safety Integrated  
**Not for motor type:** -  
**Min** 0.00 [%]  
**Max** 100.00 [%]  
**Factory setting** 10.00 [%]

### Description:
Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA).

- The value must be increased if C30711 has occurred with message value 1042.
- The value must be decreased if C30711 has occurred with message value 1041.

### Dependency:
Refer to: C30711

### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### Note:
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

#### p9389  
**SI Motion voltage tolerance acceleration (Motor Module) / SI Mtn U tol MM**

**VECTOR_G**  
**Can be changed:** C2(95)  
**Data type:** FloatingPoint32  
**P-Group:** Safety Integrated  
**Not for motor type:** -  
**Min** 10.00 [%]  
**Max** 3300.00 [%]  
**Factory setting** 100.00 [%]

### Description:
Sets the voltage tolerance for suppressing acceleration peaks.

An increase in this percentage value means that voltage peaks will need to have a higher amplitude when accelerating if they are not to affect actual value sensing.

- The value must be increased if C30711 with message value 1042 has occurred.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

### Dependency:
Refer to: C30711

### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### Note:
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).
### List of parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r9390[0...3]</strong></td>
<td>SI Motion version safety motion monitoring (Motor Module) / SI Mtn Version MM</td>
</tr>
<tr>
<td><strong>VECTOR_G</strong></td>
<td>Can be changed: - Can be calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dynamic index:</strong> - <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td><strong>Units group:</strong> - <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong> <strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the Safety Integrated version for the safe monitoring functions.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r9590, r9770, r9870, r9890</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Example: r9390[0] = 2, r9390[1] = 60, r9390[2] = 1, r9390[3] = 0 --&gt; SI Motion version V02.60.01.00</td>
</tr>
</tbody>
</table>

| **r9398[0...1]** | SI Motion actual checksum SI parameters (Motor Module) / SI Mtn act CRC MM |
| **VECTOR_G** | Can be changed: - Can be calculated: - Access level: 3 |
| **Data type:** Unsigned32 | **Dynamic index:** - **Func. diagram:** - |
| **P-Group:** Safety Integrated | **Units group:** - **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - **Expert list:** 1 |
| **Min** | **Max** **Factory setting** |
| **Description:** | Displays the checksum for the checked Safety Integrated parameters of the motion monitoring function (actual checksum) on the Motor Module. |
| **Index:** | [0] =Checksum over SI parameters for motion monitoring [1] =Checksum over SI parameters with hardware reference |
| **Dependency:** | Refer to: p9399 |
| **Note:** | SI: Safety Integrated |

| **p9399[0...1]** | SI Motion reference checksum SI parameters (Motor Module) / SI Mtn setp CRC MM |
| **VECTOR_G** | Can be changed: C2(95) Can be calculated: - Access level: 3 |
| **Data type:** Unsigned32 | **Dynamic index:** - **Func. diagram:** - |
| **P-Group:** Safety Integrated | **Units group:** - **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - **Expert list:** 1 |
| **Min** | **Max** **Factory setting** |
| 0000 hex | FFFF FFFF hex 0000 hex |
| **Description:** | Sets the checksum for the checked Safety Integrated parameters of the motion monitoring functions (reference checksum) on the Motor Module. |
| **Index:** | [0] =Checksum over SI parameters for motion monitoring [1] =Checksum over SI parameters with hardware reference |
| **Dependency:** | Refer to: r9398 |
| **Note:** | SI: Safety Integrated |

| **r9406[0...19]** | PS file parameter number parameter not transferred / PS par_no n transf |
| **All objects** | Can be changed: - Can be calculated: - Access level: 4 |
| **Data type:** Unsigned16 | **Dynamic index:** - **Func. diagram:** - |
| **P-Group:** - | **Units group:** - **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - **Expert list:** 1 |
| **Min** | **Max** **Factory setting** |
| **Description:** | Displays the parameters that were not able to be transferred when reading the parameter back-up files (PS files) from the non-volatile memory (e.g. memory card). |
Parameters

List of parameters

r9406[0] = 0
--> All of the parameter values were able to be transferred error-free.
r9406[0...x] > 0
--> indicates the parameter number in the following cases:
- parameter, whose value was not able to be completely accepted.
- indexed parameter, where at least 1 index was not able to be accepted. The first index that is not transferred is displayed in r9407.

Dependency:
Refer to: r9407, r9408

Note:
All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted

r9406[0...19] PS file parameter index parameter not transferred / PS parameter index

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Data type: Unsigned16
Dynamic index: -
Units group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min
Max
Factory setting

Description:
Displays the first index of the parameters that could not be transferred when the parameter backup files (PS files) were read from the non-volatile memory (e.g. memory card).

If, from an indexed parameter, at least one index was not able to be transferred, then the parameter number is displayed in r9406[n] and the first index that was not transferred is displayed in r9407[n].
r9406[0] = 0
--> All of the parameter values were able to be transferred error-free.
r9406[n] > 0
--> Displays r9407[n] the first index of the parameter number r9406[n] that was not transferred.

Dependency:
Refer to: r9406, r9408

Note:
All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted

r9408[0...19] PS file fault code parameter not transferred / PS fault code

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

Data type: Unsigned16
Dynamic index: -
Units group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min
Max
Factory setting

Description:
Only for internal Siemens service purposes.

Dependency:
Refer to: r9406, r9407

Note:
All indices from r9406 to r9408 designate the same parameter.
r9406[x] parameter number, parameter not accepted
r9407[x] parameter index, parameter not accepted
r9408[x] fault code, parameter not accepted
### List of parameters

#### r9409

**Number of parameters to be saved / Qty par to save**

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** -  
**Not for motor type:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the number of modified parameters and those that have still not be saved for this drive object.

**Dependency:** Refer to: p0971, p0977

**Notice:**
- Inherent to the system, the list of the parameters to be backed up is empty after the following actions:
  - Download
  - Warm restart
  - Factory setting

In these cases, a new parameter backup must be initiated, which is then the starting point for the list of modified parameters.

**Note:** The modified parameters that still need to be saved are internally listed in r9410 ... r9419.

#### r9450[0...29]

**Reference value change parameter with unsuccessful calculation / Ref_chg par n poss**

<table>
<thead>
<tr>
<th>B_INF, ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** -  
**Not for motor type:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the parameters for which the re-calculation was unsuccessful after an internal system reference value change.

**Dependency:** Refer to: F07086

#### r9451[0...29]

**Units changeover adapted parameters / Unit_chngov par**

<table>
<thead>
<tr>
<th>B_INF, ENC, VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** -  
**Not for motor type:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the parameters whose parameter would have to be changed during a units changeover.

**Dependency:** Refer to: F07088

#### r9481

**Number of BICO interconnections / BICO count**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Commands  
**Not for motor type:** -  
**Min:** -  
**Max:** -  
**Factory setting:** -

**Description:** Displays the number of BICO interconnections (signal sinks).

**Dependency:** Refer to: r9482, r9483
### Parameters

#### List of parameters

**Note:**
The selected BICO interconnections should be entered into r9482 and r9483.

<table>
<thead>
<tr>
<th>BICO interconnections BI/CI parameters / BICO BI/CI par</th>
<th>r9482[0...n]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF</strong></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td><strong>CU_G130_DP</strong></td>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td><strong>CU_G130_PN</strong></td>
<td>P-Group: Commands</td>
</tr>
<tr>
<td><strong>CU_G150_DP</strong></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td><strong>CU_G150_PN, ENC, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G</strong></td>
<td>Min</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the signal sinks (binector/connector inputs, BI/CI parameters).

**Dependency:**
Refer to: r9481, r9483

**Note:**
The list is sorted according to signal sources and is structured as follows:
r9842[0]: Interconnection 1 (signal sink, BICO coded), r9843[0]: Interconnection 1 (signal source, BICO coded)
r9842[1]: Interconnection 2 (signal sink, BICO coded), r9843[1]: Interconnection 2 (signal source, BICO coded)

<table>
<thead>
<tr>
<th>BICO interconnections BO/CO parameters / BICO BO/CO par</th>
<th>r9483[0...n]</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF</strong></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td><strong>CU_G130_DP</strong></td>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td><strong>CU_G130_PN</strong></td>
<td>P-Group: Commands</td>
</tr>
<tr>
<td><strong>CU_G150_DP</strong></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td><strong>CU_G150_PN, ENC, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G</strong></td>
<td>Min</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the signal sources (binector/connector outputs, BO/CO parameters).

**Dependency:**
Refer to: r9481, r9482

**Note:**
The list is sorted according to signal sources and is structured as follows:
r9842[0]: Interconnection 1 (signal sink, BICO coded), r9843[0]: Interconnection 1 (signal source, BICO coded)
r9842[1]: Interconnection 2 (signal sink, BICO coded), r9843[1]: Interconnection 2 (signal source, BICO coded)

<table>
<thead>
<tr>
<th>p9484 BICO interconnections search signal source / BICO S_src srch</th>
<th>p9484</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B_INF</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>CU_G130_DP</strong></td>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td><strong>CU_G130_PN</strong></td>
<td>P-Group: -</td>
</tr>
<tr>
<td><strong>CU_G150_DP</strong></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td><strong>CU_G150_PN, ENC, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G</strong></td>
<td>Min</td>
</tr>
<tr>
<td>0</td>
<td>4294967295</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.
The question is answered:

How often is a connection made to a signal source in the drive object and from which index are these interconnections saved (r9482 and r9483)?

Dependency:
Refer to: r9481, r9482, r9483, r9485, r9486

<table>
<thead>
<tr>
<th>r9485</th>
<th>BICO interconnections signal source search count / BICO S_src srchQty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16 Dynamic index: - Units group: - Unit selection: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 0</td>
<td></td>
</tr>
</tbody>
</table>

Min Max Factory setting
- - -

Description: Displays the number of BICO interconnections to the signal sink being searched for.

Dependency: Refer to: r9481, r9482, r9483, p9484, r9486

Note: The signal source to be searched is set in p9484 (BICO-coded).
The search result is contained in r9482 and r9483 and is specified by the count (r9485) and the first index (r9486).

<table>
<thead>
<tr>
<th>r9486</th>
<th>BICO interconnections signal source search first index / BICO S_src srchIdx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16 Dynamic index: - Units group: - Unit selection: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: - Scaling: - Expert list: 0</td>
<td></td>
</tr>
</tbody>
</table>

Min Max Factory setting
- - -

Description: Displays the first index of the signal source being searched for.

Dependency: Refer to: r9481, r9482, r9483, p9484, r9485

Note: The signal source to be searched is set in p9484 (BICO-coded).
The search result is contained in r9482 and r9483 and is specified by the count (r9486) and the first index (r9486).

<table>
<thead>
<tr>
<th>r9490</th>
<th>Number of BICO interconnections to other drives / Qty BICO to drive</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16 Dynamic index: - Units group: - Unit selection: - Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td></td>
</tr>
<tr>
<td>- - -</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the number of signal sources from this drive to other drives/drive objects (Binector Output/Connector Output, BO/CO).

Dependency: Refer to: r9491, r9492, p9493
### r9491[0...9]

**Title:** BI/CI of BICO interconnections to other drives / BI/CI to drive

**Description:** Displays the signal receiver list (Binector Input/Connector Input, BI/CI) for the first interconnections between this drive and other drives/drive objects.

**Dependency:** Refer to: r9490, r9492, p9493

**Notice:** A drive cannot be deleted if this list is not empty! Otherwise, another drive would continue to attempt to read a signal from a drive that no longer existed.

**Note:** All indices of r9491 to p9493 designate the same interconnection.
r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

**Can be changed:** -
**Calculated:** -
**Access level:** 3
**Data type:** Unsigned32
**Dynamic index:** -
**Func. diagram:** -
**P-Group:** Commands
**Units group:** -
**Unit selection:** -
**Not for motor type:** -
**Scaling:** -
**Expert list:** 1
**Min:** -
**Max:** -
**Factory setting:** -

### r9492[0...9]

**Title:** BO/CO of BICO interconnections to other drives / BO/CO to drive

**Description:** Displays the signal source list (Binector Output/Connector Output, BO/CO) for the first interconnections between this drive and other drives/drive objects.

**Dependency:** Refer to: r9490, r9491, p9493

**Notice:** A drive cannot be deleted if this list is not empty! Otherwise, another drive would continue to attempt to read a signal from a drive that no longer existed.

**Note:** All indices of r9491 to p9493 designate the same interconnection.
r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

**Can be changed:** -
**Calculated:** -
**Access level:** 3
**Data type:** Unsigned32
**Dynamic index:** -
**Func. diagram:** -
**P-Group:** Commands
**Units group:** -
**Unit selection:** -
**Not for motor type:** -
**Scaling:** -
**Expert list:** 1
**Min:** -
**Max:** -
**Factory setting:** -

### p9493[0...9]

**Title:** Reset BICO interconnections to other drives / Reset BICO to drive

**Description:** Setting to reset the BICO interconnections to other drives. Each interconnection can be individually reset.

**Value:**
- 0: Set connection to 0
- 1: Set connection to 1 (100 %)
- 15: Finished

**Dependency:** Refer to: r9490, r9491, r9492

**Note:** All indices of r9491 to p9493 designate the same interconnection.
r9491[x] contains the signal receiver and r9492[x] the matching signal source; p9493[x] can be set to modify the interconnection.

**Can be changed:** T
**Calculated:** -
**Access level:** 3
**Data type:** Integer16
**Dynamic index:** -
**Func. diagram:** -
**P-Group:** -
**Units group:** -
**Unit selection:** -
**Not for motor type:** -
**Scaling:** -
**Expert list:** 1
**Min:** 0
**Max:** 15
**Factory setting:** 15
**p9495**  
**BICO behavior for de-activated drive objects / Behav for deact DO**

- **Can be changed:** T  
- **Data type:** Integer16  
- **P-Group:** -  
- **Not for motor type:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the behavior for BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

**Value:**
- 0: Inactive
- 1: Save interconnections
- 2: Save interconnections and establish the factory setting

**Dependency:**
Refer to: p9496, p9497, p9498, p9499  
Refer to: A01318, A01507

**Note:**
For p9495 = 0, the following applies:
- the number of interconnections is zero (p9497 = 0).

**p9496**  
**BICO behavior when activating drive objects / Behav when act DO**

- **Can be changed:** T  
- **Data type:** Integer16  
- **P-Group:** -  
- **Not for motor type:** -  

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the behavior when activating BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

**Value:**
- 0: Inactive
- 1: Restore the interconnections from the list
- 2: Delete the interconnections from the list

**Dependency:**
Refer to: p9495, p9497, p9498, p9499  
Refer to: A01318, A01507

**Note:**
The BI/CI parameters involved are listed in p9498[0...29] (signal sink).
The associated BO/CO parameters are listed in p9499[0...29] (signal source).

After p9496 = 1, 2 the following applies:
- p9497 = 0
- p9496 = 0
### Parameters

**List of parameters**

<table>
<thead>
<tr>
<th>p9497</th>
<th>BICO interconnections to de-activated drive objects number / Interconn obj qty</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>65535</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Displays the number of saved BICO interconnections to drive objects that are either not capable of operation or have been deactivated.

BO/CO parameters are on the drive object that is either not capable of operation or has been deactivated (signal source).

**Dependency:**
Refer to: p9495, p9496, p9498, p9499
Refer to: A01318, A01507

<table>
<thead>
<tr>
<th>p9498[0...29]</th>
<th>BICO BI/CI parameters to de-activated drive objects / BI/CI to deact obj</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Displays the saved BI/CI parameters (signal sink), whose source is located on drive objects that are either not capable of operation or have been deactivated.

**Dependency:**
Refer to: p9495, p9496, p9497, p9499
Refer to: A01318, A01507

**Note:**
A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.

<table>
<thead>
<tr>
<th>p9499[0...29]</th>
<th>BICO BO/CO parameters to de-activated drive objects / BO/CO to deact obj</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Displays the saved BO/CO parameters (signal source), which are located on drive objects that are either not capable of operation or have been deactivated.

**Dependency:**
Refer to: p9495, p9496, p9497, p9498
Refer to: A01318, A01507

**Note:**
A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.
### List of parameters

**p9500**
**SI Motion monitoring clock cycle (Control Unit) / SI Mtn clock CU**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0.50 [ms]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>25.00 [ms]</td>
<td></td>
<td>12.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the monitoring clock cycle for safe motion monitoring.

**Dependency:**
Refer to: r2064, p9511
Refer to: F01652

**Note:**
A change only becomes effective after a POWER ON.

The monitoring clock cycle must be a multiple of the actual value sensing clock cycle in p9511 (dbSI) or of the DP clock cycle (ncSI).

**p9501**
**SI Motion enable safety functions (Control Unit) / SI Mtn enable CU**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td>-----------</td>
<td>---</td>
<td>----------------</td>
<td>---------</td>
</tr>
<tr>
<td>00</td>
<td>Enable SOS/SLM (SBH/SG)</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>01</td>
<td>Enable SLP (SE)</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>02</td>
<td>Enable absolute position</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>03</td>
<td>Enable actual value synchronization</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>16</td>
<td>Enable hysteresis and filtering</td>
<td>Enable</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Enable transfer SLS (SG) limit value via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
<tr>
<td>25</td>
<td>Enable transfer safe position via PROFIsafe</td>
<td>Enable</td>
<td>Inhibit</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: F01682, F01683

**Note:**
A change only becomes effective after a POWER ON.

SDI: Safe Direction (safe motion direction)
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

**p9502**
**SI Motion axis type (Control Unit) / SI Mtn ax type CU**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the axis type (linear axis or rotary axis/spindle).

**Value:**
0: Linear axis
1: Rot axis/spindle

**Note:**
For the commissioning software, after changing over the axis type, the units dependent on the axis type are only updated after a project upload.
A change only becomes effective after a POWER ON.
### p9503

**SI Motion SCA (SN) enable (Control Unit) / SI Mtn SCA enab**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Enable SCA1 (SN1)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Enable SCA2 (SN2)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Enable SCA3 (SN3)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Enable SCA4 (SN4)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Enable SCA5 (SN5)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Enable SCA6 (SN6)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Enable SCA7 (SN7)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Enable SCA8 (SN8)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Enable SCA9 (SN9)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Enable SCA10 (SN10)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Enable SCA11 (SN11)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Enable SCA12 (SN12)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Enable SCA13 (SN13)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Enable SCA14 (SN14)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Enable SCA15 (SN15)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Enable SCA16 (SN16)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Enable ESCA17 (SN17)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Enable SCA18 (SN18)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Enable SCA19 (SN19)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Enable SCA20 (SN20)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Enable SCA21 (SN21)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Enable SCA22 (SN22)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Enable SCA23 (SN23)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Enable SCA24 (SN24)</td>
<td>Enable</td>
<td>Inhibit</td>
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</tr>
<tr>
<td>24</td>
<td>Enable SCA25 (SN25)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>25</td>
<td>Enable SCA26 (SN26)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Enable SCA27 (SN27)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>Enable SCA28 (SN28)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Enable SCA29 (SN29)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>29</td>
<td>Enable SCA30 (SN30)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9501
Refer to: F01686

**Note:**
The "Safe Cam" function (SCA) can either be enabled using p9501 or p9503.
SCA: Safe Cam / SN: Safe software cam

### p9505

**SI Motion SP modulo value (Control Unit) / SI mtn SP mod CU**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Enable SCA1 (SN1)</td>
<td>Enable</td>
</tr>
<tr>
<td>1</td>
<td>Enable SCA2 (SN2)</td>
<td>Enable</td>
</tr>
<tr>
<td>2</td>
<td>Enable SCA3 (SN3)</td>
<td>Enable</td>
</tr>
<tr>
<td>3</td>
<td>Enable SCA4 (SN4)</td>
<td>Enable</td>
</tr>
<tr>
<td>4</td>
<td>Enable SCA5 (SN5)</td>
<td>Enable</td>
</tr>
<tr>
<td>5</td>
<td>Enable SCA6 (SN6)</td>
<td>Enable</td>
</tr>
<tr>
<td>6</td>
<td>Enable SCA7 (SN7)</td>
<td>Enable</td>
</tr>
<tr>
<td>7</td>
<td>Enable SCA8 (SN8)</td>
<td>Enable</td>
</tr>
<tr>
<td>8</td>
<td>Enable SCA9 (SN9)</td>
<td>Enable</td>
</tr>
<tr>
<td>9</td>
<td>Enable SCA10 (SN10)</td>
<td>Enable</td>
</tr>
<tr>
<td>10</td>
<td>Enable SCA11 (SN11)</td>
<td>Enable</td>
</tr>
<tr>
<td>11</td>
<td>Enable SCA12 (SN12)</td>
<td>Enable</td>
</tr>
<tr>
<td>12</td>
<td>Enable SCA13 (SN13)</td>
<td>Enable</td>
</tr>
<tr>
<td>13</td>
<td>Enable SCA14 (SN14)</td>
<td>Enable</td>
</tr>
<tr>
<td>14</td>
<td>Enable SCA15 (SN15)</td>
<td>Enable</td>
</tr>
<tr>
<td>15</td>
<td>Enable SCA16 (SN16)</td>
<td>Enable</td>
</tr>
<tr>
<td>16</td>
<td>Enable ESCA17 (SN17)</td>
<td>Enable</td>
</tr>
<tr>
<td>17</td>
<td>Enable SCA18 (SN18)</td>
<td>Enable</td>
</tr>
<tr>
<td>18</td>
<td>Enable SCA19 (SN19)</td>
<td>Enable</td>
</tr>
<tr>
<td>19</td>
<td>Enable SCA20 (SN20)</td>
<td>Enable</td>
</tr>
<tr>
<td>20</td>
<td>Enable SCA21 (SN21)</td>
<td>Enable</td>
</tr>
<tr>
<td>21</td>
<td>Enable SCA22 (SN22)</td>
<td>Enable</td>
</tr>
<tr>
<td>22</td>
<td>Enable SCA23 (SN23)</td>
<td>Enable</td>
</tr>
<tr>
<td>23</td>
<td>Enable SCA24 (SN24)</td>
<td>Enable</td>
</tr>
<tr>
<td>24</td>
<td>Enable SCA25 (SN25)</td>
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</tr>
<tr>
<td>25</td>
<td>Enable SCA26 (SN26)</td>
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</tr>
<tr>
<td>26</td>
<td>Enable SCA27 (SN27)</td>
<td>Enable</td>
</tr>
<tr>
<td>27</td>
<td>Enable SCA28 (SN28)</td>
<td>Enable</td>
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<tr>
<td>28</td>
<td>Enable SCA29 (SN29)</td>
<td>Enable</td>
</tr>
<tr>
<td>29</td>
<td>Enable SCA30 (SN30)</td>
<td>Enable</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9501
Refer to: F01686

**Note:**
The "Safe Cam" function (SCA) can either be enabled using p9501 or p9503.
SCA: Safe Cam / SN: Safe software cam
Dependency: Refer to: p9501
Refer to: F01681

Notice: When the "SLP" function is activated, the modulo function must be deactivated as otherwise fault F01681 will be output.
If the absolute position is not enabled, then the parameterized modulo value is not taken into account.

Note: SLP: Safety-Limited Position
SP: Safe Position

**p9506**

### SI Motion function specification (Control Unit) / SI Mtn fct_spc CU

**VECTOR_G**

* Can be changed: C2(95)  
* Calculated: -  
* Access level: 3  

**Data type:** Integer16  
**Dynamic index:** -  
**Func. diagram:** -  

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  

**Min**  
**Max**  
**Factory setting**  
0  
3  
0

**Description:** Sets the function specification for the safe motion monitoring.

**Value:**  
0: Safety with encoder and accel_monitoring(SAM) / delay time  
1: Safety without encoder with braking ramp (SBR)  
3: Safety without encoder with accel_monitoring(SAM) / delay time

**Dependency:** Refer to: C01711

**p9507**

### SI Motion function specification (Control Unit) / SI Mtn config CU

**VECTOR_G**

* Can be changed: C2(95)  
* Calculated: -  
* Access level: 3  

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -  

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Factory setting**  
0000 bin

**Description:** Sets the function configuration for the safe motion monitoring functions.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Extended message acknowledgement</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Setpoint velocity limit for STOP F</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Motor type sensorless actual value sensing</td>
<td>Synchronous motor</td>
<td>Induction motor</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>SS1 drive-based braking response</td>
<td>without OFF3</td>
<td>with OFF3</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: C01711

**Note:**

Re bit 00:  
When the function is activated, a safety-relevant acknowledgement (internal event acknowledge) can be performed by selecting/deselecting STO.
Re bit 01:  
When the function is activated, the active setpoint velocity limit (CO: r9733) is set to zero when STOP F is active.
Re bit 02:  
This bit defines the type of motor, which the sensorless safety technology evaluates.
For bit = 0, the sensorless motion monitoring function calculates the actual velocity for an induction motor.
For bit = 1, an actual velocity is calculated for a synchronous motor. This value depends on the setting in p0300.
Bit = 0 should be set if no motor is defined (p0300 = 0).
Re bit 03:  
When the function is activated, the drive-based braking response (OFF3 ramp) after SS1/internal STOP B is deactivated. Braking monitoring (SBR, SAM) is also deactivated.
### p9509
**SI Motion behavior during pulse suppression (Control Unit) / SI Mtn behav IL CU**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>SSM during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>SDI during pulse suppression and sensor-less</td>
<td>Becomes inactive</td>
<td>Remains active</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: C01711

**Notice:**
- If the OFF1 or the OFF3 ramp-down time is too low, or there is an insufficient clearance between the SSM limit speed, and the shutdown speed, then it is possible that the "speed under limit value" signal does not change to 1, because no speed actual value below the SSM limit was able to be identified before pulse cancellation. In this case, the OFF1 or the OFF3 ramp-down time or the clearance between the SSM limit speed and shutdown speed must be increased.

**Note:**
- SDI: Safe Direction (safe motion direction)
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

**Description:** Sets the behavior of safety functions and their feedback during pulse suppression in encoderless operation.

### p9510
**SI Motion clock-cycle synchronous PROFIBUS master / SI Mtn sync master**

**VECTOR_G**

**Description:** Setting for clock cycle synchronous communication between PROFIdrive controller and Control Unit.

The parameter is only relevant, if the safety-relevant motion monitoring functions integrated in the drive have been enabled (p9601.2 = 1).

If a PROFIdrive controller exchanges process data in clock cycle synchronisation with the Control Unit, then p9510 must be set to 1. This also applies if the drive itself does not exchange process data in clock cycle synchronisation.

Examples for clock cycle synchronisation communication:
- clock-cycle synchronous control for the motion control (e.g. SIMOTION).
- clock-cycle synchronous PROFI safe master (e.g. SIMATIC S7-400F).

**Value:**
- 0: Communication not isochronous
- 1: Communication isochronous

**Dependency:** Refer to: C01711, A01796

**Notice:** As of firmware version 2.6, the parameter has no effect.
### p9511  SI Motion actual value sensing cycle clock (Control Unit) / SI Mtn act clk CU

| Description: | Sets the clock cycle time of the actual value sensing for safe motion monitoring. Setting criteria if the motion monitoring functions are executed with an encoder: - A slower clock cycle time reduces the maximum permissible velocity - however, it ensures a lower load of the Control Unit for safe actual value sensing. - The maximum permissible velocity which, when exceeded, can mean that errors occur during safe actual value sensing, is displayed in r9730. - The isochronous PROFIBUS clock cycle is used as a clock cycle time for actual value sensing with a setting of 0 ms; the setting is 1 ms if isochronous operation is not being used. Setting criteria if the motion monitoring functions are executed without an encoder: - The actual value sensing clock cycle must be set to the same value as the current controller clock cycle (p0115). |
| Dependency: | Refer to: p0115, F01652 |
| Note: | The parameter is only active for drive-based motion monitoring functions (p9601.2 = 1). The monitoring clock cycle from p9500 must be an integer multiple of this parameter. In the case of motion monitoring functions with encoder, the clock cycle time for actual value sensing must be an integer multiple of the current controller clock cycle and at least 4 times slower than the current controller clock cycle. A factor of at least 8 is recommended. The clock cycle time of the actual value sensing should not be set to more than 8 ms. A change only becomes effective after a POWER ON. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min</td>
<td>0.0000 [ms]</td>
<td>The minimum value is 0.0000 ms.</td>
</tr>
<tr>
<td>Max</td>
<td>25.0000 [ms]</td>
<td>The maximum value is 25.0000 ms.</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0000 [ms]</td>
<td>The factory setting is 0.0000 ms.</td>
</tr>
</tbody>
</table>

### p9512  Select SI Motion safety functions without selection (CU) / SI Mtn w/o sel CU

| Description: | Sets the safety functions without selection. The safety functions without selection are enabled with p9601.5/p9801.5. Using this parameter, the individual motion monitoring functions can then be selected (e.g. SLS, SDI positive, SDI negative), which should then be permanently selected. |
| Dependency: | Refer to: p9601, p9801, F01682 |
| Note: | A change becomes immediately effective after exiting the safety commissioning mode. SDI: Safe Direction (safe motion direction). SLS: Safely-Limited Speed |

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>SLS static (CU)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI positive static (CU)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SDI negative static (CU)</td>
<td>Statically active</td>
<td>Statically inact</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
Parameters

List of parameters

**p9513**

SI Motion non safety-relevant measuring steps POS1 (CU) / nsrPOS1

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** Unsigned32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min**
  - 0
- **Max**
  - 4294967295

**Description:**
Sets the non safety-relevant measuring steps of position value POS1.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Dependency:**
Refer to: p0416, r0473, p9313

**Note:**
For safe functions that are not enabled (p9501 = 0), the following applies:
- p9513 is automatically set the same as r0416 when the system boots.
For safety functions that are enabled (p9501 > 0), the following applies:
- p9513 is checked to see that it matches p0416.

**p9514**

SI Motion absolute encoder linear measuring steps (CU) / Enc lin meas step

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** Unsigned32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min**
  - 0 [nm]
- **Max**
  - 4294967295 [nm]

**Description:**
Sets the resolution of the absolute position for a linear absolute encoder.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Dependency:**
Refer to: p0422, r0469, p9314

**Note:**
For safe functions that are not enabled (p9501 = 0), the following applies:
- p9514 is automatically set the same as r0422 when the system boots.
For safety functions that are enabled (p9501 > 0), the following applies:
- p9514 is checked to see that it matches r0422.

**p9515**

SI Motion encoder coarse position value config (Control Unit) / SI Mtn s config CU

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** Unsigned32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min**
  - -
- **Max**
  - 0000 0000 0000 0000 0000

**Description:**
Sets the encoder configuration for the redundant coarse position value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Incrementer</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Encoder CRC least significant byte first</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Redundant coarse position val. most significant bit left-aligned</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Binary comparison not possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DRIVE-CLIQ encoder</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r0474, p9315
Note:
For safe functions that are not enabled (p9501 = 0), the following applies:
- p9515 is automatically set the same as p0474 when the system boots.
For safety functions that are enabled (p9501 > 0), the following applies:
- p9515 is checked to see that it matches p0474.

**p9516**
**SI Motion encoder configuration safety functions (Control Unit) / SI Mtn enc_cfg CU**

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** Unsigned16  
Dynamic index: -  
Func. diagram: -

**P-Group:** Safety Integrated  
Units group: -  
Unit selection: -

**Not for motor type:** -  
Scaling: -  
Expert list: 1

**Min:**  
Max:  
Factory setting: 0000 bin

**Description:**
Sets the configuration for the motor encoder and position actual value.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Motor encoder, rotating/linear</td>
<td>Linear</td>
<td>Rotating:</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Position actual value, sign change</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0404, p0410
Refer to: F01671

**Note:**
For safe functions that have not been enabled (p9501 = 0), the following applies:
- p9516.0 is automatically set the same as p0404.0 when the system boots.
- p9516.1 is automatically set the same as p0410.1 when the system boots.
For safety functions that are enabled (p9501 > 0), the following applies:
- p9516.0 is checked to identify whether it coincides with p0404.0.

**p9517**
**SI Motion linear scale grid division (Control Unit) / SI Mtn grid CU**

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** FloatingPoint32  
Dynamic index: -  
Func. diagram: -

**P-Group:** Safety Integrated  
Units group: -  
Unit selection: -

**Not for motor type:** -  
Scaling: -  
Expert list: 1

**Min**  
Max  
Factory setting: 0.00 [nm] 250000000.00 [nm] 10000.00 [nm]

**Description:**
Sets the grid division for a linear motor encoder.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Dependency:**
Refer to: p0407, p9516
Refer to: F01671

**Note:**
For safety functions that have not been enabled (p9501 = 0), the following applies: When booting p9517 is automatically set the same as p0407.
For safety functions that are enabled (p9501 > 0), the following applies: p9517 is checked whether it coincides with p0407.

**p9518**
**SI Motion encoder pulses per revolution (Control Unit) / SI Mtn puls/rev CU**

**VECTOR_G**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3

**Data type:** Unsigned32  
Dynamic index: -  
Func. diagram: -

**P-Group:** Safety Integrated  
Units group: -  
Unit selection: -

**Not for motor type:** -  
Scaling: -  
Expert list: 1

**Min:**  
Max  
Factory setting: 0 16777215 2048

**Description:**
Sets the number of encoder pulses per revolution for rotary motor encoders.

The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.
Parameters

List of parameters

Dependency: Refer to: p0408, p9516
Refer to: F01671

Note: For safety functions that have not been enabled (p9501 = 0), the following applies: When booting, p9518 is automatically set the same as p0408.
For safety functions that are enabled (p9501 > 0), the following applies: p9518 is checked whether it coincides with p0408.

p9519 | SI Motion fine resolution G1_XIST1 (Control Unit) / SI Mtn G1_XIST1 CU
VECTOR_G
Can be changed: C2(95)
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
18
11

Description:
Sets the fine resolution for G1_XIST1 in bits.
The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

Dependency: Refer to: p0418
Refer to: F01671

Note: For safety functions that have not been enabled (p9501 = 0), the following applies: When booting, p9519 is automatically set the same as p0418.
For safety functions that are enabled (p9501 > 0), the following applies: p9519 is checked whether it coincides with p0418.

G1_XIST1: Encoder 1 position actual value 1 (PROFIdrive)

p9520 | SI Motion spindle pitch (Control Unit) / SI Mtn Sp_pitch CU
VECTOR_G
Can be changed: C2(95)
Data type: FloatingPoint32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
0.1000 [mm]
8388.0000 [mm]
10.0000 [mm]

Description:
Sets the gear ratio between the encoder and load in mm/revolution for a linear axis with rotary encoder.

Notice: The fourth decimal point can be rounded-off depending on the size of the entered number (from 3 places before the decimal point).

p9521[0...7] | SI Motion gearbox enc (motor)/load denominator (Control Unit) / SI Mtn gear den CU
VECTOR_G
Can be changed: C2(95)
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
1
2147000000
1

Description:
Sets the denominator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.

Index:
[0] = Gearbox 1
[1] = Gearbox 2
[7] = Gearbox 8

Dependency: Refer to: p9522

Notice: It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.
### List of parameters

#### p9522[0...7]
**SI Motion gearbox encoder (motor)/load numerator (Control Unit) / SI Mtn gear num CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9522[0...7]</td>
<td>Sets the numerator for the gearbox between the encoder (or motor in the case of encoderless monitoring functions) and the load.</td>
<td>[0]</td>
<td>Gearbox 1</td>
<td>It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.</td>
<td>p9521</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1]</td>
<td>Gearbox 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[7]</td>
<td>Gearbox 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p9521

**Notice:** It is not possible to change over the gearbox stages. Gearbox 1 (index 0) is always active.

**Note:** In the case of encoderless monitoring functions, the pole pair number must be multiplied by the numerator of the gearbox ratio.

Example:
- Gearbox ratio 1:4, pole pair number (r0313) = 2
  --> p9521 = 1, p9522 = 8 (4 x 2)

#### p9523
**SI Motion redundant coarse pos. value valid bits (Control Unit) / Valid bits CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9523</td>
<td>Sets the number of valid bits of the redundant coarse position value.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0470, p9523

**Note:**
- For safe functions that are not enabled (p9501 = 0), the following applies:
  - p9523 is automatically set the same as r0470 when the system boots.
- For safety functions that are enabled (p9501 > 0), the following applies:
  - p9523 is checked to see that it matches r0470.

#### p9524
**SI Motion Redundant coarse pos. value fine resolution bits (CU) / SI Mtn fine bit CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9524</td>
<td>Sets the number of valid bits for the fine resolution of the redundant coarse position value.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0471, p9524
### Parameters

**List of parameters**

**Note:** For safe functions that are not enabled (p9501 = 0), the following applies:
- p9524 is automatically set the same as r0471 when the system boots.

For safety functions that are enabled (p9501 > 0), the following applies:
- p9524 is checked to see that it matches r0471.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p9525</strong></td>
<td><strong>SI Motion Redundant coarse pos. value relevant bits (CU) / Relevant bits CU</strong>&lt;br&gt;Can be changed: C2(95)&lt;br&gt;Data type: Unsigned16&lt;br&gt;P-Group: Safety Integrated&lt;br&gt;Not for motor type: -&lt;br&gt;Min 0&lt;br&gt;Max 16&lt;br&gt;Access level: 3&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting</td>
<td>Refer to: p0414, r0472, p9325&lt;br&gt;For safe functions that are not enabled (p9501 = 0), the following applies:&lt;br&gt;- p9525 is automatically set the same as r0472 when the system boots.&lt;br&gt;For safety functions that are enabled (p9501 &gt; 0), the following applies:&lt;br&gt;- p9525 is checked to see that it matches r0472.</td>
<td>Sets the number of relevant bits for the redundant coarse position value.&lt;br&gt;The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.</td>
</tr>
<tr>
<td><strong>p9526</strong></td>
<td><strong>SI Motion encoder assignment second channel / SI Mtn enc chan 2</strong>&lt;br&gt;Can be changed: C2(95)&lt;br&gt;Data type: Unsigned32&lt;br&gt;P-Group: Safety Integrated&lt;br&gt;Not for motor type: -&lt;br&gt;Min 1&lt;br&gt;Max 3&lt;br&gt;Access level: 3&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting</td>
<td>For the safe motion monitoring functions, the redundant safety position actual value sensing must be activated in the appropriate encoder data set (p0430.19 = 1).&lt;br&gt;Refer to: p0187, p0188, p0189, p0430&lt;br&gt;Note: For p9526 = 1, the encoder for the closed-loop speed control is used for the second channel of the motion monitoring functions (1-encoder system).&lt;br&gt;A change only becomes effective after a POWER ON.</td>
<td>Sets the number of the encoder that the second channel (control, Motor Module) uses for safe motion monitoring functions.</td>
</tr>
<tr>
<td><strong>p9529</strong></td>
<td><strong>SI Motion Gx_XIST1 coarse pos. safe most significant bit (CU) / Gx_XIST1 MSB CU</strong>&lt;br&gt;Can be changed: C2(95)&lt;br&gt;Data type: Unsigned16&lt;br&gt;P-Group: Safety Integrated&lt;br&gt;Not for motor type: -&lt;br&gt;Min 0&lt;br&gt;Max 31&lt;br&gt;Access level: 3&lt;br&gt;Expert list: 1&lt;br&gt;Factory setting</td>
<td>Refer to: p0415, r0475, p9329&lt;br&gt;Note: For safe functions that are not enabled (p9501 = 0), the following applies:&lt;br&gt;- p9529 is automatically set the same as r0475 when the system boots.&lt;br&gt;For safety functions that are enabled (p9501 &gt; 0), the following applies:&lt;br&gt;- p9529 is checked to see that it matches r0475.&lt;br&gt;MSB: Most Significant Bit</td>
<td>Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position. The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.</td>
</tr>
</tbody>
</table>
### p9530: SI Motion standstill tolerance (Control Unit) / SI Mtn standst_tol

| Description: | Sets the tolerance for the function "Safe Operating Stop" (SOS). |
| Dependency: | Refer to: C01707 |
| Note: | SOS: Safe Operating Stop / SBH: Safe operating stop |

| Can be changed: | C2(95) |
| Data type: | FloatingPoint32 |
| P-Group: | Safety Integrated |
| Not for motor type: | - |
| Min | 0.000 [mm] |
| Max | 100.000 [mm] |
| Factory setting | 1.000 [mm] |

### p9530: SI Motion standstill tolerance (Control Unit) / SI Mtn standst_tol

| Description: | Sets the tolerance for the function "Safe Operating Stop" (SOS). |
| Dependency: | Refer to: C01707 |
| Note: | SOS: Safe Operating Stop / SBH: Safe operating stop |

| Can be changed: | C2(95) |
| Data type: | FloatingPoint32 |
| P-Group: | Safety Integrated |
| Not for motor type: | - |
| Min | 0.000 [°] |
| Max | 100.000 [°] |
| Factory setting | 1.000 [°] |

### p9531[0...3]: SI Motion SLS (SG) limit values (Control Unit) / SI Mtn SLS lim CU

| Description: | Sets the limit values for the function "Safely-Limited Speed" (SLS). |
| Index: | [0] = Limit value SLS1 |
| | [1] = Limit value SLS2 |
| | [2] = Limit value SLS3 |
| | [3] = Limit value SLP4 |
| Dependency: | Refer to: p9532, p9561, p9563 |
| Note: | SLS: Safely-Limited Speed / SG: Safely reduced speed |

| Can be changed: | C2(95) |
| Data type: | FloatingPoint32 |
| P-Group: | Safety Integrated |
| Not for motor type: | - |
| Min | 0.00 [mm/min] |
| Max | 100000.00 [mm/min] |
| Factory setting | 2000.00 [mm/min] |

### p9531[0...3]: SI Motion SLS (SG) limit values (Control Unit) / SI Mtn SLS lim CU

| Description: | Sets the limit values for the function "Safely-Limited Speed" (SLS). |
| Index: | [0] = Limit value SLS1 |
| | [1] = Limit value SLS2 |
| | [2] = Limit value SLS3 |
| | [3] = Limit value SLP4 |
| Dependency: | Refer to: p9532, p9561, p9563 |
| Note: | SLS: Safely-Limited Speed / SG: Safely reduced speed |

| Can be changed: | C2(95) |
| Data type: | FloatingPoint32 |
| P-Group: | Safety Integrated |
| Not for motor type: | - |
| Min | 0.00 [rpm] |
| Max | 100000.00 [rpm] |
| Factory setting | 2000.00 [rpm] |
Parameters

List of parameters

**Note:**

SLS: Safely-Limited Speed / SG: Safely reduced speed

**p9532[0...15]**  
**SI Motion SLS (SG) override factor (Control Unit) / SI Mtn SLS over CU**  
**VECTOR_G**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the override factor for the limit value for SLS2 and SLS4 for the function “Safely-Limited Speed” (SLS).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>Sets the override factor for the limit value for SLS2 and SLS4 for the function “Safely-Limited Speed” (SLS).</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000 [%]</td>
<td>100.000 [%]</td>
<td>100.000 [%]</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p9501, p9531

**Note:**

The actual override factor for SLS2 and SLS4 is selected using the safety-relevant inputs (SGE).

SLS: Safely-Limited Speed / SG: Safely reduced speed

**p9533**  
**SI Motion SLS setpoint velocity limiting (Control Unit) / SI Mtn SLS set_lim**  
**VECTOR_G**

<table>
<thead>
<tr>
<th>Description</th>
<th>This is an evaluation factor to define the setpoint limit from the selected actual speed limit. The active SLS limit value is evaluated with this factor and is made available as setpoint limit in r9733.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency:</td>
<td>This parameter only has to be parameterized for the motion monitoring functions integrated in the drive (p9601.2 = 1).</td>
</tr>
</tbody>
</table>

**r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)**

**r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)**

**[x] = Selected SLS stage**

Conversion factor from the motor side to the load side:
- motor type = rotary and axis type = linear; p9522 / (p9521 x p9520)
- otherwise: p9522 / p9521

Refer to: p9501, p9531, p9601

**Note:**

The active actual speed limit is selected via safety-relevant inputs (SGE).

When selecting SOS or a STOP A ... D, setpoint 0 is specified in r9733.

SLS: Safely-Limited Speed
### p9534[0...1]

<table>
<thead>
<tr>
<th><strong>SI Motion SLP (SE) upper limit values (Control Unit) / SI Mtn SLP up lim</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the upper limit for the function &quot;Safely-Limited Position&quot; (SLP).</td>
</tr>
<tr>
<td><strong>Index:</strong> [0] = Limit value SLP1 (SE1)</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p9501, p9535, p9562</td>
</tr>
<tr>
<td><strong>Note:</strong> For setting this limit value, the following applies: p9534[x] &gt; p9535[x], x = 0, 1</td>
</tr>
<tr>
<td><strong>Factory setting</strong> 2147000.000 [mm]</td>
</tr>
</tbody>
</table>

#### Can be changed: C2(95)  Calculated: -  Access level: 3
#### Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 2822
#### P-Group: Safety Integrated  Units group: -
#### Not for motor type: -  Scaling: -  Expert list: 1
#### Min -2147000.000 [mm]  Max 2147000.000 [mm]

### p9534[0...1]

<table>
<thead>
<tr>
<th><strong>SI Motion SLP (SE) upper limit values (Control Unit) / SI Mtn SLP up lim</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G (Safety rot)</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the upper limit for the function &quot;Safely-Limited Position&quot; (SLP).</td>
</tr>
<tr>
<td><strong>Index:</strong> [0] = Limit value SLP1 (SE1)</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p9501, p9535, p9562</td>
</tr>
<tr>
<td><strong>Note:</strong> For setting this limit value, the following applies: p9534[x] &gt; p9535[x], x = 0, 1</td>
</tr>
<tr>
<td><strong>Factory setting</strong> 2147000.000 [°]</td>
</tr>
</tbody>
</table>

#### Can be changed: C2(95)  Calculated: -  Access level: 3
#### Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 2822
#### P-Group: Safety Integrated  Units group: -
#### Not for motor type: -  Scaling: -  Expert list: 1
#### Min -2147000.000 [°]  Max 2147000.000 [°]

### p9535[0...1]

<table>
<thead>
<tr>
<th><strong>SI Motion SLP (SE) lower limit values (Control Unit) / SI Mtn SLP low lim</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the lower limit for the function &quot;Safely-Limited Position&quot; (SLP).</td>
</tr>
<tr>
<td><strong>Index:</strong> [0] = Limit value SLP1 (SE1)</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p9501, p9534, p9562</td>
</tr>
<tr>
<td><strong>Note:</strong> For setting this limit value, the following applies: p9534[x] &gt; p9535[x], x = 0, 1</td>
</tr>
<tr>
<td><strong>Factory setting</strong> -100000.000 [mm]</td>
</tr>
</tbody>
</table>

#### Can be changed: C2(95)  Calculated: -  Access level: 3
#### Data type: FloatingPoint32  Dynamic index: -  Func. diagram: 2822
#### P-Group: Safety Integrated  Units group: -
#### Not for motor type: -  Scaling: -  Expert list: 1
#### Min -2147000.000 [mm]  Max 2147000.000 [mm]
### Description:
Sets the lower limit for the function "Safely-Limited Position" (SLP).

### Index:
- [0] = Limit value SLP1 (SE1)
- [1] = Limit value SLP2 (SE2)

### Dependency:
Refer to: p9501, p9534, p9562
Refer to: C01715

### Note:
For setting this limit value, the following applies: p9534[x] > p9535[x], x = 0, 1
A change only becomes effective after a POWER ON.

SLP: Safely-Limited Position / SE: Safe software limit switches

### p9535[0...1]
**SI Motion SLP (SE) lower limit values (Control Unit) / SI Mtn SLP low lim**

<table>
<thead>
<tr>
<th>Vector G (Safety rot)</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2822</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2147000.000 [°]</td>
<td>2147000.000 [°]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Factory setting**

### Description:
Sets the lower limit for the function "Safely-Limited Position" (SLP).

### Index:
- [0] = Limit value SLP1 (SE1)
- [1] = Limit value SLP2 (SE2)

### Dependency:
Refer to: p9501, p9534, p9562
Refer to: C01715

### Note:
For setting this limit value, the following applies: p9534[x] > p9535[x], x = 0, 1
A change only becomes effective after a POWER ON.

SLP: Safely-Limited Position / SE: Safe software limit switches

### p9536[0...29]
**SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA+**

<table>
<thead>
<tr>
<th>Vector G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2147000.000 [mm]</td>
<td>2147000.000 [mm]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Factory setting**

### Description:
Sets the plus cam position for the function "Safe Cam" (SCA).

### Index:
- [0] = Cam position SCA1 (SN1)
- [1] = Cam position SCA2 (SN2)
- [2] = Cam position SCA3 (SN3)
- [3] = Cam position SCA4 (SN4)
- [4] = Cam position SCA5 (SN5)
- [5] = Cam position SCA6 (SN6)
- [6] = Cam position SCA7 (SN7)
- [7] = Cam position SCA8 (SN8)
- [8] = Cam position SCA9 (SN9)
- [9] = Cam position SCA10 (SN10)
- [10] = Cam position SCA11 (SN11)
- [12] = Cam position SCA13 (SN13)
- [13] = Cam position SCA14 (SN14)
- [14] = Cam position SCA15 (SN15)
- [15] = Cam position SCA16 (SN16)
- [16] = Cam position SCA17 (SN17)
- [17] = Cam position SCA18 (SN18)
- [18] = Cam position SCA19 (SN19)
- [19] = Cam position SCA20 (SN20)
- [20] = Cam position SCA21 (SN21)
- [21] = Cam position SCA22 (SN22)
- [22] = Cam position SCA23 (SN23)
- [23] = Cam position SCA24 (SN24)
- [25] = Cam position SCA26 (SN26)
- [26] = Cam position SCA27 (SN27)
- [27] = Cam position SCA28 (SN28)
- [28] = Cam position SCA29 (SN29)
- [29] = Cam position SCA30 (SN30)

### Dependency:
Refer to: p9501, p9536, p9537

### Note:
A change only becomes effective after a POWER ON.
SCA: Safe Cam / SN: Safe software cam
**Parameters**

**List of parameters**

---

**p9536[0...29]**

**SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA+**

Description:
Sets the plus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency:
Refer to: p9501, p9503, p9537

Note:
A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

---

**p9537[0...29]**

**SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA-**

Description:
Sets the minus cam position for the function "Safe Cam" (SCA).

Index:
[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)

---

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Parameters

List of parameters

[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

Dependency:
Refer to: p9501, p9503, p9536

Note:
A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

p9537[0...29] SI Motion SCA (SN) plus cam position (Control Unit) / SI Mtn SCA-
VECTOR_G (Safety rot)

Data type: FloatingPoint32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
-2147000.000 [°] 2147000.000 [°] -10.000 [°]

Description:
Sets the minus cam position for the function "Safe Cam" (SCA).

Index:

[0] = Cam position SCA1 (SN1)
[1] = Cam position SCA2 (SN2)
[2] = Cam position SCA3 (SN3)
[3] = Cam position SCA4 (SN4)
[5] = Cam position SCA6 (SN6)
[6] = Cam position SCA7 (SN7)
[7] = Cam position SCA8 (SN8)
[8] = Cam position SCA9 (SN9)
[9] = Cam position SCA10 (SN10)
[10] = Cam position SCA11 (SN11)
[12] = Cam position SCA13 (SN13)
[13] = Cam position SCA14 (SN14)
[14] = Cam position SCA15 (SN15)
[15] = Cam position SCA16 (SN16)
[16] = Cam position SCA17 (SN17)
[17] = Cam position SCA18 (SN18)
[18] = Cam position SCA19 (SN19)
[19] = Cam position SCA20 (SN20)
[20] = Cam position SCA21 (SN21)
[21] = Cam position SCA22 (SN22)
[22] = Cam position SCA23 (SN23)
[23] = Cam position SCA24 (SN24)
[25] = Cam position SCA26 (SN26)
[26] = Cam position SCA27 (SN27)
### List of parameters

[27] = Cam position SCA28 (SN28)
[28] = Cam position SCA29 (SN29)
[29] = Cam position SCA30 (SN30)

**Dependency:**
Refer to: p9501, p9503, p9536

**Note:**
A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

#### p9538[0...29] SI Motion SCA (SN) cam track assignment (Control Unit) / SI Mtn SCA assign.

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>414</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Assigns the individual cams to the maximum of 4 cam tracks and defines the numerical value for the SGA "cam range".

p9538[0...29] = CBA dec

C = Assignment of the cam to the cam track.
Valid values are 1, 2, 3, 4.

BA = Numerical value for the SGA "cam range".
If the position lies in the range of this cam, the value BA is signaled to the safety-relevant logic via the SGA "cam range" of the cam track set using C.
Valid values are 0 ... 14. Each numerical value may only be used once for each cam track.
**Parameters**

**List of parameters**

Examples:

\[ p9538[0] = 207 \]

Cam 1 (index 0) is assigned cam track 2. If the position lies within the range of this cam, a value of 7 is entered in the SGA "cam range" of the second cam track.

\[ p9538[5] = 100 \]

Cam 6 (index 5) is assigned cam track 1. If the position lies within the range of this cam, a value of 0 is entered in the SGA "cam range" of the first cam track.

**Index:**

\[ [0] = \text{Track assignment SCA1} \]
\[ [1] = \text{Track assignment SCA2} \]
\[ [2] = \text{Track assignment SCA3} \]
\[ [3] = \text{Track assignment SCA4} \]
\[ [4] = \text{Track assignment SCA5} \]
\[ [5] = \text{Track assignment SCA6} \]
\[ [6] = \text{Track assignment SCA7} \]
\[ [7] = \text{Track assignment SCA8} \]
\[ [8] = \text{Track assignment SCA9} \]
\[ [9] = \text{Track assignment SCA10} \]
\[ [10] = \text{Track assignment SCA11} \]
\[ [11] = \text{Track assignment SCA12} \]
\[ [12] = \text{Track assignment SCA13} \]
\[ [13] = \text{Track assignment SCA14} \]
\[ [14] = \text{Track assignment SCA15} \]
\[ [15] = \text{Track assignment SCA16} \]
\[ [16] = \text{Track assignment SCA17} \]
\[ [17] = \text{Track assignment SCA18} \]
\[ [18] = \text{Track assignment SCA19} \]
\[ [19] = \text{Track assignment SCA20} \]
\[ [20] = \text{Track assignment SCA21} \]
\[ [21] = \text{Track assignment SCA22} \]
\[ [22] = \text{Track assignment SCA23} \]
\[ [23] = \text{Track assignment SCA24} \]
\[ [24] = \text{Track assignment SCA25} \]
\[ [25] = \text{Track assignment SCA26} \]
\[ [26] = \text{Track assignment SCA27} \]
\[ [27] = \text{Track assignment SCA28} \]
\[ [28] = \text{Track assignment SCA29} \]
\[ [29] = \text{Track assignment SCA30} \]

**Dependency:**

Refer to: p9501, p9503
Refer to: F01681

**Note:**

A change only becomes effective after a POWER ON.

SCA: Safe Cam / SN: Safe software cam

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9540</td>
<td>SI Motion SCA (SN) tolerance (Control Unit) / SI Mtn SCA tol CU</td>
</tr>
</tbody>
</table>

**VECTOR_G**

Can be changed: U, T  Calculated: -  Access level: 4

Data type: FloatingPoint32  Dynamic index: -  Func. diagram: -

P-Group: Safety Integrated  Units group: -  Unit selection: -

Not for motor type: -  Scaling: -  Expert list: 1

Min Max Factory setting

0.0010 [mm] 10.0000 [mm] 0.1000 [mm]
**p9540**  
**SI Motion SCA (SN) tolerance (Control Unit) / SI Mtn SCA tol CU**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0.0010 [°]  

**Max**  
10.0000 [°]  
0.1000 [°]

**Description:**  
Sets the tolerance for the function "Safe Cam" (SCA).  
Within this tolerance, both monitoring channels may signal different signal states of the same safe cam.

**Note:**  
A change only becomes effective after a POWER ON.

---

**p9541**  
**SI Motion encoder comparison algorithm (CU) / Enc comp algo**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Integer16  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0  
255

**Max**  
255  
255

**Description:**  
Sets the comparison algorithm for the encoder position monitoring functions.  
The encoder that is used for the safe motion monitoring functions on the Control Unit must be parameterized in this parameter.

**Value:**  
0: SMx20 safety algorithm  
10: DQL binary safety algorithm  
11: DQL linear non-binary safety algorithm  
255: Safety algorithm unknown

**Dependency:**  
Refer to: p0417, p9341

**Note:**  
For safe functions that are not enabled (p9501 = 0), the following applies:  
- p9541 is automatically set the same as r0417 when the system boots.  
For safety functions that are enabled (p9501 > 0), the following applies:  
- p9541 is checked to see that it matches r0417.

---

**p9542**  
**SI Motion act val comparison tol (crosswise) (Control Unit) / SI Mtn act tol CU**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min**  
0.0010 [mm]  
360.0000 [mm]  
0.1000 [mm]

**Max**  
360.0000 [mm]  
0.1000 [mm]

**Description:**  
Sets the tolerance for the crosswise data comparison of the actual position between the two monitoring channels.  
For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary and 1 mm linear).

**Dependency:**  
Refer to: C01711

**Note:**  
For a linear axis, the tolerance is internally limited to 10 mm.  
For a "linear axis with rotating motor" and standard setting of p9520, p9521 and p9522, the standard setting of p9542 corresponds to a position tolerance of 36 ° on the motor side.
### p9542

**SI Motion act val comparison tol (crosswise) (Control Unit) / SI Mtn act tol CU**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.0010 [°]</td>
</tr>
<tr>
<td>Max</td>
<td>360.0000 [°]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.1000 [°]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance for the crosswise data comparison of the actual position between the two monitoring channels. For encoderless motion monitoring functions, the tolerance must be set to a higher value (12 degrees rotary and 1 mm linear).

**Dependency:**
Refer to: C01711

**Note:**
For a linear axis, the tolerance is internally limited to 10 mm. For a "linear axis with rotating motor" and standard setting of p9520, p9521 and p9522, the standard setting of p9542 corresponds to a position tolerance of 36 ° on the motor side.

### p9544

**SI Motion actual value comparison tolerance (referencing) (CU) / SI Mtn ref tol**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.0000 [mm]</td>
</tr>
<tr>
<td>Max</td>
<td>36.0000 [mm]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.0100 [mm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance to check the actual values after referencing (incremental encoder) or when powering up (absolute encoder).

**Dependency:**
Refer to: C01711

**Note:**
A change only becomes effective after a POWER ON. For linear axes, the maximum value is limited to 1mm.

### p9545

**SI Motion SSM (SGA n < nx) filter time (Control Unit) / SI Mtn SSM filt CU**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [ms]</td>
</tr>
<tr>
<td>Max</td>
<td>100.00 [ms]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the filter time for the SSM feedback signal to detect standstill.

**Note:**
The filter time is effective only if the function is enabled (p9501.16 = 1). The parameter is included in the crosswise data comparison of the two monitoring channels. SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
List of parameters

**Description:**
Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).
When this limit value is undershot, the signal "SSM feedback signal active" (SGA n < n_x) is set.
For p9568 = 0, the value in p9546 is also applicable for the function "SAM".

**Caution:**
The following applies for p9506 = 3:
The "SAM" function is switched out if the selected threshold value is undershot.

**Note:**
F-DO: Failsafe Digital Output / SGA: Safety-related output
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) / SGA n < nx: Safety-related output n < nx

---

**p9546**

*SI Motion SSM (SGA n < nx) velocity limit (CU) / SI Mtn SSM v_limCU*

**VECTOR_G**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [mm/min]
- **Max:** 1000000.00 [mm/min]
- **Expert list:** 1

**Description:**
Sets the velocity limit for the SSM feedback signal to detect standstill (n < nx).
When this limit value is undershot, the signal "SSM feedback signal active" (SGA n < n_x) is set.

**Caution:**
The following applies for p9506 = 3:
The "SAM" function is switched out if the selected threshold value is undershot.

**Note:**
F-DO: Failsafe Digital Output / SGA: Safety-related output
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) / SGA n < nx: Safety-related output n < nx

---

**p9547**

*SI Motion SSM (SGA n < nx) velocity hysteresis (CU) / SI Mtn SSM hyst CU*

**VECTOR_G**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.0010 [mm/min]
- **Max:** 500.0000 [mm/min]

**Description:**
Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n < nx).

**Dependency:**
Refer to: C01711

**Note:**
The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).
The parameter is included in the crosswise data comparison of the two monitoring channels.
SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)
### p9547
**SI Motion SSM (SGA n < nx) velocity hysteresis (CU) / SI Mtn SSM hyst CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(95)</td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.0010 [rpm]</td>
<td>Sets the velocity hysteresis for the SSM feedback signal to detect standstill (n &lt; nx).</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>500.0000 [rpm]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>10.0000 [rpm]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: C01711

**Note:**
- The velocity hysteresis is effective only if the function is enabled (p9501.16 = 1).
- The parameter is included in the crosswise data comparison of the two monitoring channels.

**SSM:** Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

### p9548
**SI Motion SAM actual velocity tolerance (Control Unit) / SI Mtn SAM tol CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(95)</td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00 [mm/min]</td>
<td>Sets the velocity tolerance for the &quot;SAM&quot; function.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>120000.00 [mm/min]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>300.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: C01706

**Note:**
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)

### p9549
**SI Motion slip velocity tolerance (Control Unit) / SI Mtn slip tol**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(95)</td>
<td></td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00 [mm/min]</td>
<td>Sets the velocity tolerance that is used for a 2-encoder system in crosswise comparison between the two monitoring channels.</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>6000.00 [mm/min]</td>
<td></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
<td>6.00 [mm/min]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p9501, p9542

**Note:**
- If the "actual value synchronization" is not enabled (p9501.3 = 0), then the value parameterized in p9542 is used as tolerance in the crosswise data comparison.
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter (ID)</th>
<th>Description</th>
<th>Default Values</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p9549</strong></td>
<td>SI Motion slip velocity tolerance (Control Unit) / SI Mtn slip tol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p9550</strong></td>
<td>SI Motion SGE changeover tolerance time (Control Unit) / SI Mtn SGE_chg tol</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p9551</strong></td>
<td>SI Motion SLS (SG) changeover delay time (Control Unit) / SI Mtn SLS t CU</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p9552</strong></td>
<td>SI Motion transition time STOP C to SOS (SBH) (Control Unit) / SI Mtn t C-&gt;SOS CU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### p9553
**SI Motion transition time STOP D to SOS (SBH) (Control Unit) / SI Mtn t D->SOS CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9553</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Sets the transition time from STOP D to &quot;Safe Operating Stop&quot; (SOS).</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>600000.00 [ms]</td>
<td>100.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9354

**Note:**
SOS: Safe Operating Stop / SBH: Safe operating stop

#### p9554
**SI Motion transition time STOP E to SOS (SBH) (Control Unit) / SI Mtn t E->SOS CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9554</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Sets the transition time from STOP E to &quot;Safe Operating Stop&quot; (SOS).</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>600000.00 [ms]</td>
<td>100.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9354

**Note:**
SOS: Safe Operating Stop / SBH: Safe operating stop

#### p9555
**SI Motion transition time STOP F to STOP B (Control Unit) / SI Mtn t F->B CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9555</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Sets the transition time from STOP F to STOP B.</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>600000.00 [ms]</td>
<td>0.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: C01711

#### p9556
**SI Motion pulse suppression delay time (Control Unit) / SI Mtn IL t_del CU**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9556</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Sets the delay time for the safe pulse suppression after STOP B.</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>3600000.00 [ms]</td>
<td>100.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9560

Refer to: C01701
### List of parameters

<table>
<thead>
<tr>
<th>Description</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the time after which the pulses must have been suppressed when initiating the test stop.</td>
<td>100.00 [ms]</td>
</tr>
<tr>
<td>Sets the maximum time for the acceptance test mode.</td>
<td>40000.00 [ms]</td>
</tr>
<tr>
<td>Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.</td>
<td>8.00 [h]</td>
</tr>
<tr>
<td>Sets the shutdown velocity for pulse suppression.</td>
<td>0.00 [mm/min]</td>
</tr>
</tbody>
</table>

| Dependency | Refer to: C01798, p9705, A01697, C01798 |
| Note       | STO: Safe Torque Off                   |

### Parameters

**p9557**  
**SI Motion pulse suppression test time (Control Unit) / SI Mtn IL t_test**  
Can be changed: C2(95)  
Data type: FloatingPoint32  
P-Group: Safety Integrated  
Not for motor type:  
Min: 0.00 [ms]  
Max: 10000.00 [ms]  
Factory setting: 100.00 [ms]

**Description:** Sets the time after which the pulses must have been suppressed when initiating the test stop.

**Dependency:** Refer to: C01798

**Note:** A change only becomes effective after a POWER ON.

**p9558**  
**SI Motion acceptance test mode time limit (Control Unit) / SI Mtn acc t CU**  
Can be changed: C2(95)  
Data type: FloatingPoint32  
P-Group: Safety Integrated  
Not for motor type:  
Min: 5000.00 [ms]  
Max: 100000.00 [ms]  
Factory setting: 40000.00 [ms]

**Description:** Sets the maximum time for the acceptance test mode.

**Dependency:** Refer to: C01799

**p9559**  
**SI Motion forced checking procedure timer (Control Unit) / SI Mtn dyn timer**  
Can be changed: C2(95)  
Data type: FloatingPoint32  
P-Group: Safety Integrated  
Not for motor type:  
Min: 0.00 [h]  
Max: 90000.00 [h]  
Factory setting: 8.00 [h]

**Description:** Sets the time interval for carrying out the forced checking procedure and testing the safety motion monitoring functions integrated in the drives.

**Dependency:** Refer to: p9705, A01697, C01798

**Note:** STO: Safe Torque Off

**p9560**  
**SI Motion pulse suppression shutdown velocity (Control Unit) / SI Mtn IL v_shutCU**  
Can be changed: C2(95)  
Data type: FloatingPoint32  
P-Group: Safety Integrated  
Not for motor type:  
Min: 0.00 [mm/min]  
Max: 60000.00 [mm/min]  
Factory setting: 0.00 [mm/min]

**Description:** Sets the shutdown velocity for pulse suppression.

**Dependency:** Refer to: p9556

---

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### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9560</td>
<td>SI Motion pulse suppression shutdown speed (Control Unit) / SI Mtn IL n_shutCU</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.00 [rpm]</td>
<td>6000.00 [rpm]</td>
<td>0.00 [rpm]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the shutdown speed for the pulse suppression. Below this speed &quot;standstill&quot; is assumed and for STOP B, the pulses are suppressed by changing to STOP A.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p9556</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p9561 | SI Motion SLS (SG) stop response (Control Unit) / SI Mtn SLS resp | Can be changed: U, T | Calculated: - | Access level: 4 |
| Data type: Integer16 | Dynamic index: - | Func. diagram: - | |
| P-Group: Safety Integrated | Units group: - | Unit selection: - | |
| Not for motor type: - | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | |
| 0 | 14 | 5 | |
| **Description:** | Sets the stop response for the function "Safely-Limited Speed" (SLS). This setting applies for all SLS limit values. An input value of less than 5 signifies personnel protection, from 10 and upwards, machine protection. This parameter can only be used for SINUMERIK Safety Integrated. For motion monitoring functions integrated in the drive, only a value of 5 is permissible. Other settings result in the safety message C01711/C30711 with message value 44. | |
| **Value:** | STOP A 1: STOP B 2: STOP C 3: STOP D 4: STOP E 5: Sets the stop response via p9563 (SLS-specific) 10: STOP A with delayed pulse suppression when the bus fails 11: STOP B with delayed pulse suppression when the bus fails 12: STOP C with delayed pulse suppression when the bus fails 13: STOP D with delayed pulse suppression when the bus fails 14: STOP E with delayed pulse suppression when the bus fails | |
| **Dependency:** | Refer to: p9531, p9563, p9580 | |
| **Note:** | SLS: Safely-Limited Speed / SG: Safely reduced speed | |

| p9562[0...1] | SI Motion SLP (SE) stop response (Control Unit) / SI Mtn SLP Stop CU | Can be changed: C2(95) | Calculated: - | Access level: 3 |
| Data type: Integer16 | Dynamic index: - | Func. diagram: - | |
| P-Group: Safety Integrated | Units group: - | Unit selection: - | |
| Not for motor type: - | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | |
| 0 | 14 | 2 | |
| **Description:** | Sets the stop response for the function "Safely-Limited Position" (SLP). | |
| **Value:** | STOP A 1: STOP B 2: STOP C 3: STOP D 4: STOP E 10: STOP A with delayed pulse suppression when the bus fails 11: STOP B with delayed pulse suppression when the bus fails 12: STOP C with delayed pulse suppression when the bus fails | |
13: STOP D with delayed pulse suppression when the bus fails
14: STOP E with delayed pulse suppression when the bus fails

Index:

\[[0] = \text{Limit value SLP1 (SE1)}\]
\[[1] = \text{Limit value SLP2 (SE2)}\]

Dependency:

Refer to: p9534, p9535

Note:

SLP: Safely-Limited Position / SE: Safe software limit switches

### p9563[0...3]

**SI Motion SLS (SG)-specific stop response (Control Unit) / SI Mtn SLS stop CU**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>14</td>
<td>2</td>
</tr>
</tbody>
</table>

Description:

Sets the SLS-specific stop response for the function "Safely-Limited Speed" (SLS).

These settings apply to the individual limit values for SLS.

An input value of less than 5 signifies personnel protection, from 10 and upwards, machine protection.

In the case of encoderless motion monitoring (p9506/p9306 = 1, 3), only a value of 0 or 1 is permitted.

Value:

0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed pulse suppression when the bus fails
11: STOP B with delayed pulse suppression when the bus fails
12: STOP C with delayed pulse suppression when the bus fails
13: STOP D with delayed pulse suppression when the bus fails
14: STOP E with delayed pulse suppression when the bus fails

Index:

\[[0] = \text{Limit value SLS1}\]
\[[1] = \text{Limit value SLS2}\]
\[[2] = \text{Limit value SLS3}\]
\[[3] = \text{Limit value SLP4}\]

Dependency:

Refer to: p9531, p9561, p9580

Note:

In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TMS4F).

SLS: Safely-Limited Speed / SG: Safely reduced speed

### p9564

**SI Motion SDI tolerance (Control Unit) / SI Mtn SDI tol CU**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2861</td>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.001 [mm]</td>
<td>360.000 [mm]</td>
<td>12.000 [mm]</td>
<td></td>
</tr>
</tbody>
</table>

Description:

Sets the tolerance for the function "Safe motion direction" (SDI).

This motion in the monitored direction is still permissible before safety message C01716 is initiated.

Dependency:

Refer to: p9565, p9566
Refer to: C01716

Note:

SDI: Safe Direction (safe motion direction)
**Parameters**

**List of parameters**

---

**p9564**

**SI Motion SDI tolerance (Control Unit) / SI Mtn SDI tol CU**

<table>
<thead>
<tr>
<th>Vector Type</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**Dynamic Index:** -

**P-Group:** Safety Integrated

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

**Max**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>360.000</td>
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</tr>
</tbody>
</table>

**Factory setting**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.000</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the tolerance for the function "Safe motion direction" (SDI). This motion in the monitored direction is still permissible before safety message C01716 is initiated.

**Dependency:**

Refer to: p9565, p9566

Refer to: C01716

**Note:**

SDI: Safe Direction (safe motion direction)

---

**p9565**

**SI Motion SDI delay time (Control Unit) / SI Mtn SDI t CU**

<table>
<thead>
<tr>
<th>Vector Type</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**Dynamic Index:** -

**P-Group:** Safety Integrated

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

**Max**

<table>
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<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
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</tbody>
</table>

**Factory setting**

<table>
<thead>
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.00</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the delay time for the function "Safe motion direction" (SDI). When selecting the SDI function, motion in the monitored direction is permissible as a maximum for this time; this means that this time can be used for braking existing motion.

**Dependency:**

Refer to: p9564, p9566

Refer to: C01716

**Note:**

SDI: Safe Direction (safe motion direction)

---

**p9566**

**SI Motion SDI stop response (Control Unit) / SI Mtn SDI Stop CU**

<table>
<thead>
<tr>
<th>Vector Type</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Integer16

**Dynamic Index:** -

**P-Group:** Safety Integrated

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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</table>

**Max**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td></td>
</tr>
</tbody>
</table>

**Factory setting**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Sets the stop response for the function "Safe motion direction" (SDI). This setting applies to both directions of motion.

**Value:**

0: STOP A
1: STOP B
2: STOP C
3: STOP D
4: STOP E
10: STOP A with delayed pulse suppression when the bus fails
11: STOP B with delayed pulse suppression when the bus fails
12: STOP C with delayed pulse suppression when the bus fails
13: STOP D with delayed pulse suppression when the bus fails
14: STOP E with delayed pulse suppression when the bus fails

**Dependency:**

Refer to: p9564, p9565

Refer to: C01716

**Notice:**

In the case of encoderless motion monitoring (p9506 = 1), only a value of 0 or 1 is permitted.

**Note:**

In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).

SDI: Safe Direction (safe motion direction)
### List of parameters

#### p9568

**SL Motion SAM velocity limit (Control Unit) / SI Mtn SAM v_limCU**

**VECTOR_G**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [mm/min]
- **Max:** 1000.00 [mm/min]
- **Factory setting:** 0.00 [mm/min]

**Description:** Sets the velocity tolerance limit for the "SAM" function.

SAM is de-activated once the set velocity limit has been undershot.

**Note:**
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

#### p9568

**SL Motion SAM velocity limit (Control Unit) / SI Mtn SAM v_limCU**

**VECTOR_G (Safety rot)**

- **Can be changed:** C2(95)  U, T
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [rpm]
- **Max:** 1000.00 [rpm]
- **Factory setting:** 0.00 [rpm]

**Description:** Sets the velocity tolerance limit for the "SAM" function.

SAM is de-activated once the set velocity limit has been undershot.

**Note:**
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

For p9568 = p9368 = 0, the following applies:

The value in p9546/p9346 (SSM) is applied as the velocity limit for SAM.

#### p9570

**SI Motion acceptance test mode (Control Unit) / SI Mtn Acc_mode**

**VECTOR_G**

- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** 00AC hex

**Description:** Setting to select and de-select the acceptance test mode.

**Value:**
- 0: [00 hex] De-select the acceptance test mode
- 172: [AC hex] Select the acceptance test mode

**Dependency:**
- Refer to: p9558, r9571, p9601

**Note:**
- Acceptance test mode can only be selected if the safe motion monitoring functions are enabled.

#### r9571

**SI Motion acceptance test status (Control Unit) / SI Mtn acc_status**

**VECTOR_G**

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0000 hex

**Description:** Displays the status of the acceptance test mode.

**Value:**
- 0: [00 hex] Acc_mode inactive
- 12: [0C hex] Acc_mode not possible due to POWER ON fault
Parameters
List of parameters

13: [0D hex] Acc_mode not possible due to incorrect ID in p9570
15: [0F hex] Acc_mode not possible due to expired Acc_timer
172: [AC hex] Acc_mode active

Dependency:
Refer to: p9558, p9570
Refer to: C01799

p9572 SI Motion reference position (Control Unit) / SI mtn rel_pos
VECTOR_G
Can be changed: U, T
Data type: FloatingPoint32
P-Group: Safety Integrated
Not for motor type: -
Min -737280.000 [mm]
Max 737280.000 [mm]
Access level: 3
Description: The reference position entered in this parameter, is used as safe absolute position when setting p9573.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003
Note: The unit depends on the selected axis type, linear or rotary axis, in p9502

p9572 SI Motion reference position (Control Unit) / SI mtn rel_pos
VECTOR_G (Safety rot)
Can be changed: U, T
Data type: FloatingPoint32
P-Group: Safety Integrated
Not for motor type: -
Min -737280.000 [°]
Max 737280.000 [°]
Access level: 3
Description: The reference position entered in this parameter, is used as safe absolute position when setting p9573.
If errors are identified when performing the plausibility checks, then message C01711 is output with message value 1003
Note: The unit depends on the selected axis type, linear or rotary axis, in p9502

p9573 SI Motion accept reference position (Control Unit) / SI mtn set_ref_pos
VECTOR_G
Can be changed: U, T
Data type: Integer16
P-Group: Safety Integrated
Not for motor type: -
Min 0
Max 122
Access level: 3
Description: The safe absolute position is rejected or newly set using this parameter.
If errors are identified when performing the plausibility checks, then message C1711 is output with message value 1003
Value: 0: No action
89: Set reference position at standstill
122: Declare reference position invalid
Dependency: Refer to: p9572

p9574 SI Motion safe position scaling (Control Unit) / SI mtn SP scal CU
VECTOR_G
Can be changed: C2(95)
Data type: Integer32
P-Group: Safety Integrated
Not for motor type: -
Min 1
Max 100000
Access level: 3
Description: Sets the scaling factor to transfer the safe position via PROFlsafe in the 16-bit notation.
Dependency: Refer to: r9713
Note: The parameter is only effective when PROFIsafe telegram 901 is selected.
By selecting a suitable scaling of the 32 bit position actual value (r9713[0]), it must be ensured that the scaled position actual value is not greater than 16 bit. The scaling is realized by dividing r9713[0] with this scaling factor.
If, during operation, a position actual value is determined, which cannot be scaled to the 16 bits, then message C0711 with value 7001 is output and safety stop response STOP F.

**p9580**

**SI Motion pulse suppression delay bus failure (Control Unit) / SI Mtn t to IL CU**

**VECTOR_G**

Can be changed: C2(95)  
Calculated:  
Access level: 3

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -

P-Group: Safety Integrated  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min  
Max  
Factory setting

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [ms]</td>
<td>800.00 [ms]</td>
<td>0.00 [ms]</td>
</tr>
</tbody>
</table>

Description: Sets the delay time after which the pulses are safely suppressed after a bus failure.
Dependency: Refer to: p9561, p9563

Note: In the extended sense, a bus failure should be seen here as a communication error in the control signals of the safety functions (e.g. via PROFIsafe or TM54F).
The main use of the wait time is the ESR function (Extended Stop and Retract).

**p9581**

**SI Motion brake ramp reference value (Control Unit) / SI Mtn ramp ref CU**

**VECTOR_G**

Can be changed: C2(95)  
Calculated:  
Access level: 3

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -

P-Group: Safety Integrated  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min  
Max  
Factory setting

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.0000 [mm/min]</td>
<td>240000.0000 [mm/min]</td>
<td>1500.0000 [mm/min]</td>
</tr>
</tbody>
</table>

Description: Sets the reference value to define the brake ramp.
The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).
Dependency: Refer to: p9582, p9583

**p9581**

**SI Motion brake ramp reference value (Control Unit) / SI Mtn ramp ref CU**

**VECTOR_G (Safety rot)**

Can be changed: C2(95)  
Calculated:  
Access level: 3

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -

P-Group: Safety Integrated  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min  
Max  
Factory setting

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>600.0000 [rpm]</td>
<td>240000.0000 [rpm]</td>
<td>1500.0000 [rpm]</td>
</tr>
</tbody>
</table>

Description: Sets the reference value to define the brake ramp.
The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).
Dependency: Refer to: p9582, p9583

**p9582**

**SI Motion brake ramp delay time (Control Unit) / SI Mtn rp t_del CU**

**VECTOR_G**

Can be changed: C2(95)  
Calculated:  
Access level: 3

Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: -

P-Group: Safety Integrated  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min  
Max  
Factory setting

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.00 [ms]</td>
<td>99000.00 [ms]</td>
<td>250.00 [ms]</td>
</tr>
</tbody>
</table>

Description: Sets the delay time for monitoring the brake ramp.
Monitoring of the brake ramp starts once the delay time has elapsed.
Dependency: Refer to: p9581, p9583
**Parameters**

**List of parameters**

### p9583 SI Motion brake ramp monitoring time (Control Unit) / SI Mtn rp t_mon CU

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.50 [s]
- **Max:** 3600.00 [s]
- **Factory setting:** 10.00 [s]

**Description:**
Sets the monitoring time to define the brake ramp.

The rate of rise of the brake ramp depends upon p9581 (reference value) and p9583 (monitoring time).

**Dependency:**
Refer to: p9581, p9582

### p9585 SI Motion fault tolerance actual value sensing sensorless (CU) / SI mtn Sl to SL CU

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** Integer32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -1
- **Max:** 4
- **Factory setting:** -1

**Description:**
Sets the tolerance of the plausibility monitoring of the current and voltage angle p9585 = 4 must be parameterized for synchronous motors.

**Dependency:**
Refer to: r9787
Refer to: F01681, C01711

**Notice:**
Reducing this value can adversely affect the actual value sensing and the plausibility check.

When the value is increased, this results in a longer evaluation delay.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

For a value of -1, for synchronous motors, the value 4 is used automatically for the calculation – and for induction motors, the value 0.

### p9586 SI Motion delay time of the evaluation sensorless (CU) / SI Mtn t_del SL CU

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 5.00 [ms]
- **Max:** 1000.00 [ms]
- **Factory setting:** 100.00 [ms]

**Description:**
Sets the evaluation delay for encoderless actual value sensing after pulse enable.

The value should be greater than or equal to the motor magnetizing time.

**Dependency:**
Refer to: C01711

**Notice:**
If this value is reduced, this can have a negative impact on the actual value acquisition and plausibility check – and result in Safety message C01711 with the message value 1041 or 1042.

When the value is increased, this results in a longer evaluation delay.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

### p9587 SI Motion act val sensing sensorless filter time (Control Unit) / SI Mtn SL filt CU

- **VECTOR_G**
- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -
- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0.00 [ms]
- **Max:** 100.00 [ms]
- **Factory setting:** 25.00 [ms]

**Description:**
Sets the filter time for smoothing the actual value with sensorless actual value sensing.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).
**List of parameters**

### p9588
**SI Motion act val sensing sensorless min current (Control Unit) / SI Mtn SL I_min CU**

**VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Min:** 0.00 [%]
- **Max:** 1000.00 [%]
- **Factory setting:** 10.00 [%]

**Description:**
Sets the minimum current for encoderless actual value sensing in reference to 10 mA (i.e. when 1 % = 10 mA).
- The value must be increased if C01711 has occurred with message value 1042.
- The value must be decreased if C01711 has occurred with message value 1041.

**Dependency:**
Refer to: r9785
Refer to: C01711

**Notice:**
Reducing this percentage value can adversely affect actual value sensing.

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

### p9589
**SI Motion voltage tolerance acceleration (Control Unit) / SI Mtn U tol CU**

**VECTOR_G**
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Min:** 10.00 [%]
- **Max:** 3300.00 [%]
- **Factory setting:** 100.00 [%]

**Description:**
Sets the voltage tolerance for suppressing acceleration peaks.
An increase in this percentage value means that voltage peaks will need to have a higher amplitude when accelerating if they are not to affect actual value sensing.
- The value must be increased if C01711 with message value 1043 has occurred.
- The value must be lowered if acceleration procedures have led to an excessive Safety actual velocity.

**Dependency:**
Refer to: r9784
Refer to: C01711

**Note:**
This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

### r9590[0...3]
**SI Motion version safety motion monitoring (Control Unit) / SI Mtn version CU**

**VECTOR_G**
- **Can be changed:**
- **Data type:** Unsigned16
- **P-Group:** Safety Integrated
- **Min:**
- **Max:**
- **Factory setting:**

**Description:**
Displays the Safety Integrated version for the safe monitoring functions.

**Index:**
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)

**Dependency:**
Refer to: r9770, r9870, r9890

**Note:**
Example:
r9590[0] = 2, r9590[1] = 60, r9590[2] = 1, r9590[3] = 0 --> SI Motion version V02.60.01.00
**List of parameters**

### Description:
Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Control Unit. Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

- **0000 hex:** Safety functions integrated in the drive inhibited (no safety function).
- **0001 hex:** Basic functions are enabled via onboard terminals (permissible for r9771.0 = 1).
- **0004 hex:** Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9771.5 = 1).
- **0005 hex:** Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9771.5 = 1).
- **0008 hex:** Basic functions are enabled via PROFIsafe (permissible for r9771.6 = 1).
- **0009 hex:** Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9771.6 = 1).
- **0024 hex:** Extended functions without selection are enabled (permissible for r9771.16 = 1).
- **0025 hex:** Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9771.16 = 1).

### Dependency:
Refer to: r9771, p9801

### Note:
A change always becomes effective only after a POWER ON. Exception: Changes to p9601.0 become effective immediately.

- **CU:** Control Unit
- **STO:** Safe Torque Off / **SH:** Safe standstill
- **SS1:** Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
- **SI:** Safety Integrated
- **SMM:** Safe Motion Monitoring
- **F-DI:** Failsafe Digital Input
- **F-DO:** Failsafe Digital Output

### Parameters:

<table>
<thead>
<tr>
<th>p9601</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VECTOR_G</td>
<td>SI enable, functions integrated in the drive (Control Unit) / SI enable fct CU</td>
<td>C2(95)</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

### Bit field:

<table>
<thead>
<tr>
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<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO (SH) via terminals (Control Unit) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2810</td>
</tr>
<tr>
<td>02</td>
<td>Enable drive_integr motion_monitoring functions (Control Unit)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>PROFIsafe (Control Unit) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Enable drv_integ motion_mon fct w/o selection (Control Unit)</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>
### p9602 SI enable Safe Brake Control (Control Unit) / SI enable SBC CU

**VECTOR_G**  
**Calculated:** -  
**Access level:** 3  
**Func. diagram:** 2814  
**Expert list:** 1

**Description:** Sets the enable signal for the function "Safe Brake Control" (SBC) on the Control Unit.

**Value:**  
- 0: Inhibit SBC  
- 1: Enable SBC

**Dependency:** Refer to: p9802

**Note:**  
The "Safe Brake Control" function is not activated until at least one safety monitoring function has been enabled (i.e. p9501 not equal to 0 and/or p9601 not equal to 0). It does not make sense to parameterize "no motor holding brake available" and enable "Safe Brake Control" (p1215 = 0, p9602 = p9802 = 1) if there is no motor holding brake. The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical. It is not permissible to parameterize "motor holding brake without feedback signals" and also enable "safe brake control" (p1278 = 1, p9602 = 1, p9802 = 1).

**CU:** Control Unit  
**SBC:** Safe Brake Control  
**SI:** Safety Integrated

<table>
<thead>
<tr>
<th>p9610</th>
<th>SI PROFIsafe address (Control Unit) / SI PROFIsafe CU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dynamic index:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFE hex</td>
</tr>
</tbody>
</table>

**Description:** Sets the PROFIsafe address for the Control Unit.

**Dependency:** Refer to: p9810

<table>
<thead>
<tr>
<th>p9611</th>
<th>SI PROFIsafe telegram selection (Control Unit) / SI Ps telegram CU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VECTOR_G</strong></td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dynamic index:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Safety Integrated</td>
<td><strong>Units group:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>0</td>
<td>998</td>
</tr>
</tbody>
</table>

**Description:** Sets the PROFIsafe telegram number for the Control Unit.

**Value:**  
- 0: No PROFIsafe telegram selected  
- 30: PROFIsafe standard telegram 30, PZD-1/1  
- 31: PROFIsafe standard telegram 31, PZD-2/2  
- 901: PROFIsafe SIEMENS telegram 901, PZD-3/5  
- 902: PROFIsafe SIEMENS telegram 902, PZD-3/6  
- 998: Compatibility mode (as for firmware version < 4.5)

**Dependency:** Refer to: p9811, p60022
### List of parameters

**p9620[0...7]**  
**BI: SI signal source for STO (SH)/SBC/SS1 (Control Unit) / SI S_srcSTO/SS1 CU**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: Unsigned32 / Binary  
Dynamic index: -  
Func. diagram: 2810  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max Factory setting
|   | - | - | 0 |

**Description:**  
Sets the signal source for the following functions on the Control Unit:  
STO: Safe Torque Off / SH: Safe standstill  
SBC: Safe Brake Control  
SS1: Safe Stop 1 (time monitored)  

**Dependency:**  
Refer to: p9601  

**Note:**  
The following signal sources are permitted:  
- fixed zero (standard setting).  
- digital inputs DI 0 ... 7, 16, 20, 21 on the Control Unit 320-2 (CU320-2).  
- digital inputs DI 0 ... 3 on the Controller Extensions (CX32-2, NX10.3, NX15.3).  
- digital inputs DI 0 ... 3, 16 on the Control Unit 310-2 (CU310-2).  

It is not permitted to establish an interconnection to a digital input in the simulation mode.  
For a parallel circuit configuration of n power units, the following applies:  
p9620[0] = Signal source for power unit 1  
...  
p9620[n-1] = Signal source for power unit n

**p9621**  
**BI: SI Safe Brake Adapter signal source (Control Unit) / SI SBA S_src CU**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: Unsigned32 / Binary  
Dynamic index: -  
Func. diagram: 2814  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max Factory setting
|   | - | - | 0 |

**Description:**  
Sets the signal source for Safe Brake Adapter (SBA).  
This defines via which digital input the Safe Brake Adapter feedback signal is read-in (SBA_DIAG).  
p9621/p9821 = 0:  
There is no Safe Brake Control (SBC) with Safe Brake Adapter (SBA) available.  
p9621/p9821 = r0722.x (x = 0, 1 ... 7)  
Safe Brake Adapter and Booksize unit (no Communication Interface Module (CIM)).  
p9621/p9821 = r9872.3  
Safe Brake Adapter and Chassis unit (CIM).  

**Dependency:**  
Refer to: p9601, p9602, p9821  

**Note:**  
No difference is tolerated for a crosswise data comparison between p9621 and p9821.  
To use the "Safe Brake Adapter" function the following must apply:  
p9601 = p9801 <> 0 and p9602 = p9802 = 1

**p9622[0...1]**  
**SI SBA relay delay times (Control Unit) / SI SBA relay t CU**  
Can be changed: C2(95)  
Calculated: -  
Access level: 3  
Data type: FloatingPoint32  
Dynamic index: -  
Func. diagram: 2814  
P-Group: Safety Integrated  
Units group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max Factory setting
<table>
<thead>
<tr>
<th></th>
<th>0.00 [ms]</th>
<th>1000.00 [ms]</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>[0] 100.00 [ms]</td>
<td>[1] 65.00 [ms]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the delay times for activating and de-activating the Safe Brake Adapter relay.

---

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The relay-specific minimum delay times for evaluating the feedback signal contacts have to be set. They differ for the activation and de-activation of one and the same relay.

**Index:**
- [0] = Wait time activation
- [1] = Wait time deactivation

**Dependency:**
Refer to: p9822

**Note:**
For a crosswise data comparison between p9622 and p9822, a difference of one Safety monitoring clock cycle is tolerated. The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

### p9650: SI SGE changeover tolerance time (Control Unit) / SI SGE_chg tol CU

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>2000.00 [ms]</td>
<td>500.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the tolerance time to change over the safety-related inputs (SGE) on the Control Unit.

An SGE changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an SGE changeover, dynamic data is not subject to a crosswise data comparison during this tolerance time.

**Dependency:**
Refer to: p9850

**Note:**
For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated.

The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

SGE: Safety-related input (e.g. STO terminals)

### p9651: SI STO/SBC/SS1 debounce time (Control Unit) / SI STO t_debou CU

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>100.00 [ms]</td>
<td>0.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the debounce time for the failsafe digital inputs used to control STO/SBC/SS1.

The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the failsafe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

**Example:**
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.

Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.

### p9652: SI Safe Stop 1 delay time (Control Unit) / SI Stop 1 t_del CU

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>300.00 [s]</td>
<td>0.00 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the delay time of the pulse suppression for the function "Safe Stop 1" (SS1) on the Control Unit to brake along the OFF3 down ramp (p1135).

**Recommend.:**
In order that the drive can completely ramp-down along the OFF3 ramp and a motor holding brake that is possibly available can close, then the delay time should be set as follows:

Motor holding brake parameterized: delay time >= p1135 + p1228 + p1217
Motor holding brake not parameterized: delay time >= p1135 + p1228

**Dependency:**
Refer to: p1135, p9852
Note: For a crosswise data comparison between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated. The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

---

### p9653  
**SI Safe Stop 1 drive-based braking response / SI SS1 OFF3**

*VECTOR_G*
- **Can be changed:** C2(95)
- **Data type:** Integer16
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Value:**
  - 0: SS1 with OFF3
  - 1: SS1 without OFF3

**Description:**
Sets the drive-based braking response for the "Safe Stop 1" (SS1) function.

**Value:**
- 0: SS1 with OFF3
- 1: SS1 without OFF3

**Note:** SS1: Safe Stop 1 (Safe Stop 1, corresponds to Stop Category 1 acc. to EN60204)

---

### p9658  
**SI transition time STOP F to STOP A (Control Unit) / SI STOP F->A CU**

*VECTOR_G*
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [ms]
- **Max:** 30000.00 [ms]
- **Value:**
  - 0: 0.00 [ms]
  - 1: 30000.00 [ms]

**Description:**
Sets the transition period from STOP F to STOP A on the Control Unit.

**Dependency:**
- Refer to: r9795, p9858
- Refer to: F01611

**Note:**
For a crosswise data comparison between p9658 and p9858, a difference of one Safety monitoring clock cycle is tolerated. The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

STOP F: Defect in a monitoring channel (error in the crosswise data comparison)
STOP A: Pulse suppression via the safety shutdown path

---

### p9659  
**SI forced checking procedure timer / SI FCP Timer**

*VECTOR_G*
- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [h]
- **Max:** 9000.00 [h]
- **Value:**
  - 0.00 [h]
  - 9000.00 [h]

**Description:**
Sets the time interval for carrying out the forced checking procedure and testing the Safety shutdown paths. Within the parameterized time, STO must have been de-selected at least once. The monitoring time is reset each time that STO is de-selected.

**Dependency:**
- Refer to: A01699

**Note:**
STO: Safe Torque Off / SH: Safe standstill
**r9660**

**SI forced checking procedure remaining time / SI frc chk remain**

<table>
<thead>
<tr>
<th>Vector G</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
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<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>- [h]</td>
<td>- [h]</td>
<td>- [h]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the time remaining before dynamization and testing of the safety shutdown paths (forced checking procedure).

**Dependency:** Refer to: A01699

---

**p9697**

**SI Motion pulse suppression failsafe delay time (CU) / SI Mtn IL t_del CU**

<table>
<thead>
<tr>
<th>Vector G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
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<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [ms]</td>
<td>800.00 [ms]</td>
<td>0.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for the pulse suppression after bus failure via failsafe values on the Control Unit (e.g. used for ESR).

**Note:** ESR: Extended Stop and Retract

---

**p9700**

**SI Motion copy function / SI Mtn copy fct**

<table>
<thead>
<tr>
<th>TMS4F_MA</th>
<th>Can be changed: C2(95), U, T</th>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0000 hex</td>
<td>0057 hex</td>
<td>0000 hex</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to start the required copy function.

**Value:**
- 0: [00 hex] Copy function ended
- 29: [1D hex] Start copy function node identifier
- 87: [57 hex] Start copy function SI parameters

**Note:**
- Re value = 57 hex:
  - The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.
  - SI: Safety Integrated

---

**p9700**

**SI Motion copy function / SI Mtn copy fct**

<table>
<thead>
<tr>
<th>Vector G</th>
<th>Can be changed: C2(95), U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0000 hex</td>
<td>00D0 hex</td>
<td>0000 hex</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to start the required copy function.

**Value:**
- 0: [00 hex] Copy function ended
- 29: [1D hex] Start copy function node identifier
- 87: [57 hex] Start copy function SI parameters
- 208: [D0 hex] Start copy function SI basic parameters
Note:

Re value = 57 hex and D0 hex:
The value can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.
Re value = D0 hex:
The following parameters are copied after starting the copy function:
p9601/p9801, p9602/p9802, p9610/p9810, p9650/p9850, p9652/p9852, p9658/p9858

**p9701 Acknowledge SI motion data change / Ackn SI Mtn dat**

**TM54F_MA, TM54F_SL**

Can be changed: C2(95), U, T  
Data type: Integer16  
P-Group: Safety Integrated  
Not for motor type: -  
Min 0000 hex  
Max 00EC hex  
Factory setting 0000 hex  

**Description:**
Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

**Value:**
0: [00 hex] Data unchanged  
172: [AC hex] Acknowledge data change complete  
236: [EC hex] Acknowledge hardware CRC  

**Dependency:**
Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899  

**Note:**
Re value = AC hex:
These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

**SI:** Safety Integrated

**p9701 Acknowledge SI motion data change / Ackn SI Mtn dat**

**VECTOR_G**

Can be changed: C2(95), U, T  
Data type: Integer16  
P-Group: Safety Integrated  
Not for motor type: -  
Min 0000 hex  
Max 00EC hex  
Factory setting 0000 hex  

**Description:**
Setting to transfer the reference checksums from the associated actual checksums after changes (SI parameters, hardware).

After transferring the reference checksums, parameters are automatically reset to zero.

**Value:**
0: [00 hex] Data unchanged  
172: [AC hex] Acknowledge data change complete  
220: [DC hex] Acknowledge SI basic parameter change  
236: [EC hex] Acknowledge hardware CRC  

**Dependency:**
Refer to: r9398, p9399, r9728, p9729, r9798, p9799, r9898, p9899  

**Note:**
Re value = AC and DC hex:
These values can only be set if the safety commissioning mode is set and the Safety Integrated password was entered.

**p9705 BI: SI Motion: Test stop signal source / SI Mtn test stop**

**VECTOR_G**

Can be changed: C2(95)  
Data type: Unsigned32 / Binary  
P-Group: Safety Integrated  
Not for motor type: -  
Min -  
Max -  
Factory setting 0  

**Description:**
Sets the signal source for the test stop of the safety-relevant motion monitoring functions.
Caution: Before setting the signal source in p9705 it must be ensured that the signal source is at a logical 0.
If, in the Safety commissioning mode, the signal source in p9705 is set - and it already has a logical 1 - then a test stop is immediately initiated and the messages C01711/C30711 are output with message value 1005.

Notice: It is not permissible to use TM54F inputs to start the test stop.

**r9708[0...4]**  
SI Motion diagnostics safe position / SI mtn safe pos  
VECTOR_G  

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 2822  
- **P-Group:** Safety Integrated  
- **Units group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** -  
- **Expert list:** 1  

**Description:** Displays the actual load-side actual values of both monitoring channels and their difference.

**Index:**
- [0] = Load-side actual value on the CU  
- [1] = Load-side actual value on the second channel  
- [2] = Load-side actual value difference CU - second channel  
- [3] = Load-side max. actual value difference CU - second channel  
- [4] = Load-side actual value as safe position via PROFIsafe  

**Dependency:** Refer to: r9713  

**Note:**
- Re index 0:
  - The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.
- Re index 1:
  - The display of the load-side position actual value on the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 2:
  - The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.
- Re index 3:
  - The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.
- Re index 4:
  - Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe".
  - The value is an average value from the values in index 0 and 1.
  - For a 16-bit notation, the value is influenced using the scaling factor (p9574/p9374).
  - When the function is not enabled, the content corresponds to the value in index 0.

CDC: Crosswise Data Comparison

---

**r9708[0...4]**  
SI Motion diagnostics safe position / SI mtn safe pos  
VECTOR_G (Safety rot)  

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** FloatingPoint32  
- **Dynamic index:** -  
- **Func. diagram:** 2822  
- **P-Group:** Safety Integrated  
- **Units group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** -  
- **Expert list:** 1  

**Description:** Displays the actual load-side actual values of both monitoring channels and their difference.

**Index:**
- [0] = Load-side actual value on the CU  
- [1] = Load-side actual value on the second channel  
- [2] = Load-side actual value difference CU - second channel  
- [3] = Load-side max. actual value difference CU - second channel  
- [4] = Load-side actual value as safe position via PROFIsafe  

**Dependency:** Refer to: r9713
Parameters

List of parameters

Note:

Re index 0:
The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.

Re index 1:
The display of the load-side position actual value on the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

Re index 2:
The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

Re index 3:
The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.

Re index 4:
Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe".
The value is an average value from the values in index 0 and 1.
For a 16-bit notation, the value is influenced using the scaling factor (p9574/p9374).
When the function is not enabled, the content corresponds to the value in index 0.

CDC: Crosswise Data Comparison

r9710[0...1] SI Motion diagnostics result list 1 / SI Mtn res_list 1

VECTOR_G

Can be changed: -
Calculated: -
Access level: 3

Data type: Unsigned32
Dynamic index: -
Func. diagram: -

P-Group: Safety Integrated
Units group: -
Unit selection: -

Not for motor type: -
Scaling: -
Expert list: 1

Min -
Max -
Factory setting -

Description:
Displays result list 1 that, for the crosswise data comparison between the monitoring channels, led to the fault.

Index:
[0] = Result list, second channel
[1] = Result list, drive

Bit field: Bit Signal name 1 signal 0 signal FP

00 Actual value > upper limit SOS Yes No -
01 Actual value > lower limit SOS Yes No -
02 Actual value > upper limit, SLP1 Yes No -
03 Actual value > lower limit, SLP1 Yes No -
04 Actual value > upper limit, SLP2 Yes No -
05 Actual value > lower limit, SLP2 Yes No -
06 Actual value > upper limit, SLS1 Yes No -
07 Actual value > lower limit, SLS1 Yes No -
08 Actual value > upper limit, SLS2 Yes No -
09 Actual value > lower limit, SLS2 Yes No -
10 Actual value > upper limit, SLS3 Yes No -
11 Actual value > lower limit, SLS3 Yes No -
12 Actual value > upper limit, SLS4 Yes No -
13 Actual value > lower limit, SLS4 Yes No -
16 Actual value > upper limit, SAM/SBR Yes No -
17 Actual value > lower limit, SAM/SBR Yes No -
18 Actual value > upper limit SDI positive Yes No -
19 Actual value > lower limit SDI positive Yes No -
20 Actual value > upper limit SDI negative Yes No -
21 Actual value > lower limit SDI negative Yes No -

Dependency:
Refer to: C01711

Note:
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SLP: Safety-Limited Position
SLS: Safely-Limited Speed
SOS: Safe Operating Stop
### r9711[0...1]

**SI Motion diagnostics result list 2 / SI Mtn res_list 2**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min** | **Max** | **Factory setting**
---|---|---
- | - | -

**Description:** Displays result list 2 that, for the crosswise data comparison between the monitoring channels, led to the fault.

**Index:**
- [0] = Result list, second channel
- [1] = Result list, drive

**Dependency:** Refer to: C01711

**Note:**
- SCA: Safe Cam
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring)

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Actual value &gt; upper limit SCA1+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Actual value &gt; lower limit, SCA1+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Actual value &gt; upper limit SCA1-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Actual value &gt; lower limit, SCA1-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Actual value &gt; upper limit SCA2+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Actual value &gt; lower limit, SCA2+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Actual value &gt; upper limit SCA2-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Actual value &gt; lower limit, SCA2-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Actual value &gt; upper limit SCA3+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Actual value &gt; lower limit, SCA3+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Actual value &gt; upper limit SCA3-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Actual value &gt; lower limit, SCA3-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Actual value &gt; upper limit SCA4+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Actual value &gt; lower limit, SCA4+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Actual value &gt; upper limit SCA4-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Actual value &gt; lower limit, SCA4-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Actual value &gt; upper limit, SSM+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Actual value &gt; lower limit, SSM+</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Actual value &gt; upper limit, SSM-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Actual value &gt; lower limit, SSM-</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Actual value &gt; upper limit, modulo</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Actual value &gt; lower limit, modulo</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r9712

**CO: SI Motion diagnostics position actual value motor side / SI Mtn s_act mot**

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min** | **Max** | **Factory setting**
---|---|---
- | - | -

**Description:** Displays the actual motor-side position actual value for the motion monitoring functions on the Control Unit.

For rotary axes, the following unit applies: Millidegrees
For linear axes, the following unit applies: micrometers

**Note:** The display is updated in the safety monitoring clock cycle.
**Parameters**

**List of parameters**

### r9713[0...4]

**CO: SI Motion diagnostics position actual value load side / SI Mtn s_act load**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting** -

**Description:** Displays the actual load-side actual values of both monitoring channels and their difference. For rotary axes, the following unit applies: Millidegrees. For linear axes, the following unit applies: micrometers.

**Index:**

- [0] = Load-side actual value on the CU  
- [1] = Load-side actual value on the second channel  
- [2] = Load-side actual value difference CU - second channel  
- [3] = Load-side max. actual value difference CU - second channel  
- [4] = Load-side actual value as safe position via PROFIsafe

**Dependency:** Refer to: r9708, r9724

**Note:**

- The value of this parameter is displayed in r9708 with units (mm or degrees).
- The display is updated in the safety monitoring clock cycle.

#### Re index 0:

The display of the load-side position actual value on the Control Unit is updated in the monitoring clock cycle.

#### Re index 1:

The display of the load-side position actual value on the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

#### Re index 2:

The difference between the load-side position actual value on the Control Unit and load-side position actual value in the second channel is updated in the CDC clock cycle (r9724) and delayed by one CDC clock cycle.

#### Re index 3:

The maximum difference between the load-side position actual value on the Control Unit and the load-side position actual value on the second channel.

#### Re index 4:

Displays the load-side position actual value when enabling the function "Safe position via PROFIsafe". The value is an average value from the values in index 0 and 1.

For a 16-bit notation, the value is influenced using the scaling factor (p9574/p9374). When the function is not enabled, the content corresponds to the value in index 0.

**CDC:** Crosswise Data Comparison

### r9714[0...2]

**CO: SI motion diagnostics velocity / SI Mtn diag v**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting** - [mm/min]

**Description:** Displays the velocity actual values for the motion monitoring functions on the Control Unit.

**Index:**

- [0] = Load-side velocity actual value on the Control Unit  
- [1] = Actual SAM/SBR velocity limit on the Control Unit  
- [2] = Actual SLS velocity limit on the Control Unit

**Dependency:** Refer to: r9732

**Notice:**

This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732).
**Parameters**

### List of parameters

**Note:**

The display is updated in the safety monitoring clock cycle.
For linear axes, the following unit applies: millimeters per minute
For rotary axes, the following unit applies: revolutions per minute

#### r9714[0...2]

**CO: SI motion diagnostics velocity / SI Mtn diag v**

| Description: | Displays the velocity actual values for the motion monitoring functions on the Control Unit. |
| Index: | 
| [0] = Load-side velocity actual value on the Control Unit |
| [1] = Actual SAM/SBR velocity limit on the Control Unit |
| [2] = Actual SLS velocity limit on the Control Unit |
| Dependency: | Refer to: r9732 |
| Notice: | Re index 2: |
| Note: | Re index 2: |
| This SLS velocity limit can, as a result of conversion into the internal monitoring format, deviate from the specified SLS velocity limit (see r9732). |
| For linear axes, the following unit applies: millimeters per minute |
| For rotary axes, the following unit applies: revolutions per minute |

#### r9718.23

**CO/BO: SI Motion control signals 1 / SI Mtn ctrl_sig 1**

| Description: | Control signal 1 for safety-relevant motion monitoring functions. |
| Bit field: | 
| Bit | Signal name | 1 signal | 0 signal | FP |
| 23 | Set offset for TFS to the actual torque | Set | Reset | - |
| Note: | TFS: Traverse to fixed stop |

#### r9719.0...31

**CO/BO: SI Motion control signals 2 / SI Mtn ctrl_sig 2**

| Description: | Control signal 2 for safety-relevant motion monitoring functions. |
| Bit field: | 
| Bit | Signal name | 1 signal | 0 signal | FP |
| 00 | De-select SOS/SLS (SBH/SG) | Yes | No | - |
| 01 | De-select SOS (SBH) | Yes | No | - |
| 03 | Select SLS (SG) bit 0 | Set | Not set | - |
| 04 | Select SLS (SG) bit 1 | Set | Not set | - |
| 05 | Deselect SDI positive | Yes | No | - |
| 06 | Deselect SDI negative | Yes | No | - |
| 07 | Deselect SLP | Yes | No | - |
| 08 | Gearbox selection, bit 0 | Set | Not set | - |
| 09 | Gearbox selection, bit 1 | Set | Not set | - |
| 10 | Gearbox selection, bit 2 | Set | Not set | - |
| 12 | Select SLP (SE) position range | SLP2 (SE2) | SLP1 (SE1) | - |
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Close brake from control</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Select test stop</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>SGE valid</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>De-select external STOP A</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>De-select external STOP C</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>De-select external STOP D</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>De-select external STOP E</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>SLS (SG) override bit 0</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>SLS (SG) override bit 1</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>SLS (SG) override bit 2</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>SLS (SG) override bit 3</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
</tbody>
</table>

#### Note:
- Re r9719.0 and r9719.1:
  - These two bits must be considered together.
  - if SOS/SLS (SBH/SG) is de-selected using bit 0, then assignment of bit 1 is irrelevant.
  - if SOS/SLS (SBH/SG) is selected using bit 0, then a changeover is made between SOS (SBH) and SLS (SG) using bit 1.

SLP: Safely-Limited Position / SE: Safe software limit switches
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop
SDI: Safe Direction (safe motion direction)

### r9720.0...19

**CO/BO: SI Motion control signals integrated in the drive / SI Mtn integ STW**

| Vector G | Can be changed: - Calculated: - Access level: 3 |
|----------|--------------------------------------------------|----------------------------------|
| Data type: Unsigned32 | Dynamic index: - Func. diagram: 2840, 2855 |
| P-Group: Safety Integrated | Units group: - Unit selection: - |
| Not for motor type: - Scaling: - Expert list: 1 |
| Min | Max |
| Factory setting | |

#### Description:
Control signals for safety-relevant motion monitoring functions integrated in the drive.

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>De-select STO</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>De-select SS1</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>De-select SS2</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>De-select SOS</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>De-select SLS</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Deselect SLP</td>
<td>Yes</td>
<td>No</td>
<td>2822</td>
</tr>
<tr>
<td>07</td>
<td>Acknowledgement</td>
<td>Signal edge active</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Select SLS bit 0</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Select SLS bit 1</td>
<td>Set</td>
<td>Not set</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Deselect SDI positive</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
<tr>
<td>13</td>
<td>Deselect SDI negative</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
<tr>
<td>19</td>
<td>Select SLP position range</td>
<td>SLP2</td>
<td>SLP1</td>
<td>2822</td>
</tr>
</tbody>
</table>

#### Note:
This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

### r9721.0...15

**CO/BO: SI Motion status signals / SI Mtn stat_sig**

| Vector G | Can be changed: - Calculated: - Access level: 3 |
|----------|--------------------------------------------------|----------------------------------|
| Data type: Unsigned32 | Dynamic index: - Func. diagram: - |
| P-Group: Safety Integrated | Units group: - Unit selection: - |
| Not for motor type: - Scaling: - Expert list: 1 |
| Min | Max |
| Factory setting | |

#### Description:
Status signal for safety-relevant motion monitoring functions.

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>SOS or SLS active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SOS active</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Pulse enable</td>
<td>Deleted</td>
<td>Enabled</td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO or safe pulse cancellation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>SS2 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>SOS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>SLP active</td>
<td>Yes</td>
<td>No</td>
<td>2822</td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>No</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Active SLS stage bit 0</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Active SLS stage bit 1</td>
<td>Set</td>
<td>Not set</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>SOS selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>SDI pos active</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
<tr>
<td>13</td>
<td>SDI neg active</td>
<td>Yes</td>
<td>No</td>
<td>2861</td>
</tr>
<tr>
<td>15</td>
<td>SSM (speed below limit value)</td>
<td>Yes</td>
<td>No</td>
<td>2860</td>
</tr>
<tr>
<td>19</td>
<td>SLP active position area</td>
<td>SLP2</td>
<td>SLP1</td>
<td>2822</td>
</tr>
<tr>
<td>22</td>
<td>SP valid</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Safely referenced</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>SLP limit upper maintained</td>
<td>Yes</td>
<td>No</td>
<td>2822</td>
</tr>
<tr>
<td>31</td>
<td>SLP limit lower maintained</td>
<td>Yes</td>
<td>No</td>
<td>2822</td>
</tr>
</tbody>
</table>

**Notice:**

Re bit 07:
The signal state behaves in an opposite way to the PROFIsafe Standard.

**Note:**

This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

Re bit 07:
An internal event is displayed if a STOP A ... F is active.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9724</td>
<td>00</td>
<td>Forced checking procedure required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>For ESR, STOP F and subsequent stop B is active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Communication failure</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Actual value sensing supplies valid value</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>Encoderless act val sensing acc to technique for U/f control</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>09</td>
<td>Safe pulse cancellation active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>SAM/SBR active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>Position referenced</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
- ESR: Extended Stop and Retract
- SAM: Safe Acceleration Monitor (safe acceleration monitoring)
- SBR: Safe Brake Ramp (safe brake ramp monitoring)

**r9724**

**SI Motion crosswise comparison clock cycle / SI Mtn CDC clk cyc**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**P-Group:** Safety Integrated

**Not for motor type:** -

**Min**

<table>
<thead>
<tr>
<th>- [ms]</th>
</tr>
</thead>
</table>

**Description:**
Displays the crosswise comparison clock cycle.
The value indicates the clock cycle time with which each individual CDC value is compared between the two monitoring channels.

**Dependency:**
Refer to: p9500

**Note:**
Crosswise comparison clock cycle = monitoring clock cycle (p9500) * number of data to be crosswise compared

**CDC:** Crosswise Data Comparison

**r9725[0...2]**

**SI Motion, diagnostics STOP F / SI Mtn Diag STOP F**

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**P-Group:** Safety Integrated

**Not for motor type:** -

**Min**

| - |

**Description:**
Re index 0:
Displays the message value that resulted in the STOP F on the drive.
Value = 0:
The Control Unit signaled a STOP F.
Value = 1 ... 999:
Number of the incorrect date in the crosswise data comparison between the monitoring channels.
Value >= 1000:
Additional diagnostic values of the drive.
Re index 1:
Displays the value of the Control Unit that resulted in the STOP F.
Re index 2:
Displays the value from the second channel that resulted in the STOP F.

**Index:**

- [0] = Message value for CDC
- [1] = Control Unit CDC actual value
- [2] = Components CDC actual value

**Dependency:**
Refer to: C01711

**Note:**
The significance of the individual message values is described in message C01711.

**CDC:** Crosswise Data Comparison
### p9726  SI Motion, user agreement selection/de-selection / SI Mtn UserAgr sel

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Setting to select and de-select the user agreement.</td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Value: 0: [00 hex] De-select user agreement</td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
<td>172: [AC hex] Select user agreement</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td>Dependency: Refer to: r9727</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0000 hex</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>00AC hex</td>
<td></td>
</tr>
</tbody>
</table>

### r9727  SI Motion user agreement, inside the drive / SI Mtn UserAgr int

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Displays the internal state of the user agreement.</td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Value = 0: User agreement is not set.</td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
<td>Value = AC hex: User agreement is set.</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td>Dependency: Refer to: p9726</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### r9728[0...2]  SI Motion actual checksum, SI parameters / SI Mtn act CRC

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>Displays the checksum over the checked Safety</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>Integrated parameters of the motion monitoring</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>functions (actual checksum).</td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>[0] = checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>motion monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>actual values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hardware</td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p9729</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: F01680</td>
<td></td>
</tr>
</tbody>
</table>

### p9729[0...2]  SI Motion reference checksum, SI parameters / SI Mtn ref CRC

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
<td>Sets the checksum using the checksum-tested</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>Safety Integrated parameters for motion</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>monitoring functions (reference checksum).</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0000 hex</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>FFFF FFFF hex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0000 hex</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>[0] = Checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>motion monitoring</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = Checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>actual values</td>
<td></td>
</tr>
<tr>
<td></td>
<td>[2] = Checksum over SI parameters for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>hardware</td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r9728</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: F01680</td>
<td></td>
</tr>
</tbody>
</table>
### r9730
**SI Motion Safe maximum velocity / SI mtn safe v_Max**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [mm/min]</td>
<td>Max</td>
</tr>
</tbody>
</table>

**Description:**
Displays the safe maximum velocity (on the load side) that is permissible for the safe motion monitoring functions as a result of the actual value sensing. This parameter indicates up to which load velocity the safe encoder actual values (redundant encoder coarse position) can still be correctly detected as a result of the particular encoder parameterization. This parameter is only of significance for enabled safety with encoder (otherwise "0").

**Note:**
If the value displayed is exceeded, message C01711 is output indicating relevant subsequent faults.

### r9731
**SI Motion Safe position accuracy / SI Mtn pos acc**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>- [mm]</td>
<td>Max</td>
</tr>
</tbody>
</table>

**Description:**
Displays the safe position accuracy (load side). As a result of the actual value sensing for safe motion monitoring functions, this accuracy can be achieved as the maximum.

**Note:**
The parameter is only of significance for enabled safety with encoder (otherwise "0").
**r9732**  
**SI Motion velocity resolution / SI Mtn v_res**

**VECTOR_G**

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** -

**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -

**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

- **Min** - [mm/min]  
- **Max** - [mm/min]  
- **Factory setting** - [mm/min]

**Description:** Displays the safe velocity resolution (load side). Setpoints for velocity limits or parameter changes for velocities below this threshold have no effect.

**Note:** This parameter does not provide any information about the actual accuracy of the velocity sensing. This depends on the type of actual value sensing, the gear factors as well as the quality of the encoder being used.

**r9733[0...2]**  
**CO: SI Motion setpoint speed limit effective / SI Mtn setp_lim**

**VECTOR_G**

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 3

**Data type:** FloatingPoint32  
**Dynamic index:** -  
**Func. diagram:** 2820, 2861, 3630

**P-Group:** Safety Integrated  
**Units group:** 3_1  
**Unit selection:** p0505

**Not for motor type:** -  
**Scaling:** p2000  
**Expert list:** 1

- **Min** - [rpm]  
- **Max** - [rpm]  
- **Factory setting** - [rpm]

**Description:** Displays the necessary setpoint speed limit as a result of the selected motion monitoring functions. Contrary to the parameterization of the SI limit values, this parameter specifies the motor-side limit value and not the load-side limit value.

**Recommend.:** For the ramp-function generator, by appropriately interconnecting the speed limits p1051 and p1052 with r9733[0, 1], a drive-based setpoint velocity limiting can be realized.

**Index:**  
- [0] = Setpoint limiting positive  
- [1] = Setpoint limiting negative  
- [2] = Setpoint limit absolute

**Dependency:**  
For SLS: r9733[0] = p9531[x] x p9533 (converted from the load side to the motor side)  
For SDI negative: r9733[0] = 0  
For SLS: r9733[1] = - p9531[x] x p9533 (converted from the load side to the motor side)  
For SDI positive: r9733[1] = 0

[x] = Selected SLS stage  
Conversion factor from the motor side to the load side:  
- motor type = rotary and axis type = linear: p9522 / (p9521 x p9520)  
- otherwise: p9522 / p9521

Refer to: p9531, p9533
### List of parameters

#### r9734.0...15

**CO/BO: SI Motion Safety Info Channel status word / SI Mtn info ch ZSW**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>SS2 active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>SOS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SLS active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>SOS selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>SLS selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Internal event</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>SDI positive selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>SDI neg selected</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>ESR retract requested</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Safety message present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the status word for the Safety information channel.

**Note:** This parameter is only supplied with actual values in the case of Safety Integrated Extended Functions. For Safety Integrated Basic Functions (SBC, SS1, STO), the value is equal to zero.

Re bit 07:
An internal event is displayed if a STOP A ... F is active.

#### p9740

**SI Motion, user agreement selection/de-selection MM / SI mtn UserAgr MM**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Value</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0000 bin</td>
<td>Setting to select and de-select the user agreement on the Motor Module.</td>
<td>1010 1100 bin</td>
<td>Refer to: r9741</td>
</tr>
<tr>
<td>00</td>
<td>[00 hex]</td>
<td>De-select user agreement</td>
<td>[AC hex]</td>
<td>Select user agreement</td>
</tr>
<tr>
<td>172</td>
<td>[AC hex]</td>
<td>Select user agreement</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r9741

**SI Motion user agreement, inside the drive MM / SI Mtn UserAgr int**

**Description:** Displays the internal state of the user agreement.
Value = 0: User agreement is not set.
Value = AC hex: User agreement is set.

Dependency:
Refer to: p9740

r9744
**SI message buffer changes, counter / SI msg_buffer chng**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Priority group</th>
<th>Units group</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9744</td>
<td>Displays the changes of the safety message buffer. This counter is incremented every time that the safety message buffer changes.</td>
<td>This is used to check whether the safety message buffer has been read out consistently.</td>
<td>Messages</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r9747, r9748, r9749, p9752, r9753, r9754, r9755, r9756

r9745[0...63]
**SI component number / SI comp_num**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Priority group</th>
<th>Units group</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9745</td>
<td>Displays the component number of the safety message that has occurred.</td>
<td></td>
<td>Messages</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:**
Value = 0: Assignment to a component not possible.

r9747[0...63]
**SI message code / SI msg_code**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Priority group</th>
<th>Units group</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9747</td>
<td>Displays the numbers of safety messages that have occurred.</td>
<td>Refer to: r9744, r9748, r9749, p9752, r9753, r9754, r9755, r9756</td>
<td>Messages</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Note:**
The messages type "safety message" (Cxxxxx) are entered in the message fault buffer. Message buffer structure (principle):
r9747[0], r9748[0], r9749[0], r9750[0], r9751[0], r9752[0], r9753[0], r9754[0], r9755[0], r9756[0] --> Actual message case, safety message 1
... r9747[7], r9748[7], r9749[7], r9750[7], r9751[7], r9752[7], r9753[7], r9754[7], r9755[7], r9756[7] --> Actual message case, safety message 8
r9747[8], r9748[8], r9749[8], r9750[8], r9751[8], r9752[8], r9753[8], r9754[8], r9755[8], r9756[8] --> 1st acknowledged message case, safety message 1
... r9747[15], r9748[15], r9749[15], r9750[15], r9751[15], r9752[15], r9753[15], r9754[15], r9755[15], r9756[15] --> 1st acknowledged message case, safety message 8
... r9747[56], r9748[56], r9749[56], r9750[56], r9751[56], r9752[56], r9753[56], r9754[56], r9755[56], r9756[56] --> 7th acknowledged message case, safety message 1
... r9747[63], r9748[63], r9749[63], r9750[63], r9751[63], r9752[63], r9753[63], r9754[63], r9755[63], r9756[63] --> 7th acknowledged message case, safety message 8
r9748[0...63]  SI message time received in milliseconds / SI t_msg_recv ms

VECTOR_G
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min - [ms]  Max - [ms]  Factory setting - [ms]
Description: Displays the relative system runtime in milliseconds when the safety message occurred.
Dependency: Refer to: r9744, r9747, r9749, p9752, r9753, r9754, r9755, r9756

r9749[0...63]  SI message value / SI msg_value

VECTOR_G
Can be changed: -  Calculated: -  Access level: 3
Data type: Integer32  Dynamic index: -  Func. diagram: -
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max - Factory setting -
Description: Displays the additional information about the safety message that occurred (as integer number).
Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9754, r9755, r9756

r9750[0...63]  SI diagnostic attributes / SI diag_attr

VECTOR_G
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: -
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max - Factory setting -
Description: Displays the diagnostic attributes of the safety messages that have occurred.

Bit field: Bit Signal name  1 signal  0 signal  FP
00  Hardware replacement recommended  Yes  No  -

p9752  SI message cases, counter / SI msg_cases count

VECTOR_G
Can be changed: U, T  Calculated: -  Access level: 3
Data type: Unsigned16  Dynamic index: -  Func. diagram: -
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting 0 65535 0
Description: Number of safety messages that have occurred since the last reset.
Dependency: The safety message buffer is cleared by resetting the parameter to 0.
Refer to: r9744, r9747, r9748, r9749, r9753, r9754, r9755, r9756
Note: The parameter is reset to 0 at POWER ON.

r9753[0...63]  SI message value for float values / SI msg_val float

VECTOR_G
Can be changed: -  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dynamic index: -  Func. diagram: -
P-Group: Messages  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max - Factory setting -
Description: Displays additional information about the safety message that has occurred for float values.
Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9754, r9755, r9756

**r9754[0...63]**  
SI message time received in days / SI t_msg recv days  
VECTOR_G  
Can be changed: -  
Data type: Unsigned16  
P-Group: Messages  
Not for motor type: -  
Min  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting  
Access level: 3

Description: Displays the relative system runtime in days when the safety message occurred.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9755, r9756

**r9755[0...63]**  
SI message time removed in milliseconds / SI t_msg rem ms  
VECTOR_G  
Can be changed: -  
Data type: Unsigned32  
P-Group: Messages  
Not for motor type: -  
Min  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting  
Access level: 3

Description: Displays the relative system runtime in milliseconds when the safety message was removed.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9754, r9756

**r9756[0...63]**  
SI message time removed in days / SI t_msg rem days  
VECTOR_G  
Can be changed: -  
Data type: Unsigned16  
P-Group: Messages  
Not for motor type: -  
Min  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting  
Access level: 3

Description: Displays the relative system runtime in days when the safety message was removed.

Dependency: Refer to: r9744, r9747, r9748, r9749, p9752, r9753, r9754, r9755

**p9761**  
SI password input / SI password inp  
VECTOR_G  
Can be changed: C1, T  
Data type: Unsigned32  
P-Group: Safety Integrated  
Not for motor type: -  
Min  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting  
Access level: 3

Description: Enters the Safety Integrated password.

Dependency: Refer to: F01659

Note: It is not possible to change Safety Integrated parameters until the Safety Integrated password has been entered.

**p9762**  
SI password new / SI password new  
VECTOR_G  
Can be changed: C2(95)  
Data type: Unsigned32  
P-Group: Safety Integrated  
Not for motor type: -  
Min  
Calculated: -  
Dynamic index: -  
Units group: -  
Scaling: -  
Expert list: 1  
Factory setting  
Access level: 3

Description: Enters a new Safety Integrated password.
Parameters

List of parameters

Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter:
Refer to: p9763

p9763  SI password acknowledgement / SI ackn password
Can be changed: C2(95)  Calculated: -  Access level: 3
Data type: Unsigned32  Dynamic index: -  Func. diagram: 2800
P-Group: Safety Integrated  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
0000 hex  FFFF FFFF hex  0000 hex
Description: Acknowledges the new Safety Integrated password.
Dependency: Refer to: p9762
Note: The new password entered into p9762 must be re-entered in order to acknowledge.
p9762 = p9763 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

r9765  SI Motion forced check procedure remaining time (Control Unit) / SI Mtn dyn remain
Can be changed: -  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dynamic index: -  Func. diagram: -
P-Group: Safety Integrated  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
- [h]  - [h]  - [h]
Description: Displays the time remaining until the next dynamization and testing of the safety motion monitoring functions integrated in the drives.
The signal source to initiate the forced checking procedure is parameterized in p9705.
Dependency: Refer to: p9705
Refer to: r9769

r9768[0...7]  SI PROFINet receive control words (Control Unit) / SI Ps PZD recv CU
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned16  Dynamic index: -  Func. diagram: -
P-Group: Safety Integrated  Units group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
- - -
Description: Displays the received PROFINet telegram on the Control Unit.
Index:
[0] = PZD 1
[1] = PZD 2
[2] = PZD 3
[3] = PZD 4
[5] = PZD 6
[6] = PZD 7
[7] = PZD 8
Dependency: Refer to: r9769
Note: The PROFINet trailer at the end of the telegram is also displayed (2 words).
### r9769[0...7]
**SI PROFlsafe send status words (Control Unit) / SI Ps PZD send CU**

**Description:**
Displays the PROFIsafe telegram to be sent on the Control Unit.

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
- [7] = PZD 8

**Dependency:**
Refer to: r9768

**Note:**
The PROFIsafe trailer at the end of the telegram is also displayed (2 words).

### r9770[0...3]
**SI version drive-integrated safety function (Control Unit) / SI version Drv CU**

**Description:**
Displays the Safety Integrated version for the drive-integrated safety functions on the Control Unit.

**Index:**
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)

**Dependency:**
Refer to: r9870, r9890

**Example:**
\[ r9770[0] = 2, r9770[1] = 60, r9770[2] = 1, r9770[3] = 0 \] \rightarrow \text{Safety version V02.60.01.00}

### r9771
**SI common functions (Control Unit) / SI common fct CU**

**Description:**
Displays the Safety Integrated monitoring functions supported on the Control Unit and Motor Module.

#### Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>01</td>
<td>SBC supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported (p9501 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>03</td>
<td>SS1 supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>04</td>
<td>Extended Functions PROFlsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Extended Functions integrated in drive supported (p9601.2 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFlsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Safe Brake Adapter supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
<td>0 signal</td>
<td>FP</td>
</tr>
<tr>
<td>-----</td>
<td>-------------------------------------------------</td>
<td>----------</td>
<td>----------</td>
<td>----</td>
</tr>
<tr>
<td>00</td>
<td>STO or safe pulse cancellation on CU selected</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>01</td>
<td>STO or safe pulse cancellation on CU active</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>02</td>
<td>SS1 delay time active on the Control Unit</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>04</td>
<td>SBC requested</td>
<td>Yes</td>
<td>No</td>
<td>2814</td>
</tr>
<tr>
<td>05</td>
<td>SS1 selected on the Control Unit (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>SS1 active on the Control Unit (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>STOP A cannot be acknowledged, active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>10</td>
<td>STOP A active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>15</td>
<td>STOP F active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>16</td>
<td>STO cause: Safety comm. mode</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>STO cause selection via terminal (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>STO cause selection via Safe Motion Monitoring (SMM)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>STO cause actual value missing or safe pulse cancellation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>STO cause selection PROFIsafe (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>SS1 cause selection terminal (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>SS1 cause selection PROFIsafe (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Dependency:
Refer to: r9872

Note:
Re bit 00:
When STO or "Safe pulse cancellation" is selected, the cause is displayed in bits 16 ... 20.
Re bit 01:
- For p9772.1 = 1 and p9772.19 = 0, an STO from the Safety Basic functions is active.
- For p9772.1 = 1 and p9772.19 = 1, safe pulse cancellation is active, if safety functions without selection are activated via p9601.2/p9801.2 = 1 and p9601.5/p9801.5 = 1.

Note:
If p9601.0 = 1 and p9601.2 = 1 and p9801.5 = 1 then for bit 0 and 1, the STO function applies.
Re bit 05:
When SS1 is selected, the cause is displayed in bits 22 and 23.
Re bit 18:
When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).
Re bit 19:
With SMM encoderless no actual value sensing is possible on account of OFF2.
With SMM with encoder no actual value sensing is possible on account of parking.
For Safety functions without selection, safe pulse cancellation to selected (p9772.19 = 1).
SMM: Safe Motion Monitoring
Re bit 22 and 23:
These bits show via which path the SS1 has been triggered, i.e. what has started the SS1 delay time.
If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.

### r9773.0...31
**CO/BO: SI status (Control Unit + Motor Module) / SI status CU+MM**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>STO selected in drive</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>STO active in drive</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>SS1 delay time active in the drive</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>SBC requested</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>SS1 selected in the drive (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>06</td>
<td>SS1 active in the drive (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>31</td>
<td>Shutdown paths must be tested</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
</tbody>
</table>

**Description:**
Displays the Safety Integrated status on the drive (Control Unit + Motor Module).

**Note:**
This status is formed from the AND operation of the relevant status of the two monitoring channels.

### r9774.0...31
**CO/BO: SI status (group STO) / SI stat group STO**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>STO selected in group</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>STO active in group</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>SS1 delay time active in group</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
Parameters

List of parameters

Dependency:
Refer to: p9620, r9773

Notice:
If a drive belonging to a group is de-activated via p0105, then the signals in r9774 can no longer be correctly displayed (Remedy: Before de-activating, remove this drive from the group).

Note:
A group is formed by appropriately grouping the terminals for the function "Safe Torque Off" (STO). The status of a group of n drives is, for drives 1 to n - 1 displayed with a delay of one monitoring clock cycle; this is a system-related effect.

r9776
SI diagnostics / SI diagnostics

VECTOR_G
Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dynamic index: - Func. diagram: -
P-Group: Safety Integrated Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description:
The parameter is used for diagnostics.

Bit field:

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Safety parameter changed POWER ON required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Note:
Re bit 00 = 1:
At least one Safety parameter has been changed that will only take effect after a POWER ON.

r9780
SI monitoring clock cycle (Control Unit) / SI monitor_clk Cu

VECTOR_G
Can be changed: - Calculated: - Access level: 3
Data type: FloatingPoint32 Dynamic index: - Func. diagram: 2802
P-Group: Safety Integrated Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - [ms] Max - [ms] Factory setting - [ms]

Description:
Displays the clock cycle time for the Safety Integrated Basic Functions on the Control Unit.

Dependency:
Refer to: r0110, p0115, r9880

r9781[0...1]
SI checksum to check changes (Control Unit) / SI chg chksm CU

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned32 Dynamic index: - Func. diagram: -
P-Group: Safety Integrated Units group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description:
Displays the checksum for tracking changes for Safety Integrated.
These are additional checksums that are created to track changes (fingerprint for the "safety logbook" functionality) to safety parameters (that are relevant for checksums).

Index:
[0] = SI checksum to track functional changes
[1] = SI checksum to track hardware-specific changes

Dependency:
Refer to: p9601, p9729, p9799
Refer to: F01690
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9782[0...1]</td>
<td>SI time stamps to check changes (Control Unit) / SI chg t CU</td>
<td></td>
<td>Refer to: p9601, p9729, p9799 Refer to: F01690</td>
</tr>
<tr>
<td>p9783</td>
<td>SI motion synchr. motor current injection sensorless / SI Mtn SM Id sl</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r9784[0...1]</td>
<td>SI Motion diagnostics acceleration encoderless / SI Mtn diag a sl</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
- Displays the time stamps for the checksums for tracking changes for Safety Integrated.
- The time stamps for the checksums for tracking changes (fingerprint for the "safety logbook" functionality) made to safety parameters are saved in parameters p9781[0] and p9781[1].

**Index:**
- [0] = SI time stamp for checksum to track functional changes
- [1] = SI time stamp for checksum to track hardware-specific changes

**Dependency:**
- Refer to: p9601, p9729, p9799
- Refer to: F01690

---

**Description:**
- Sets the field-generating current for sensorless actual value sensing of synchronous motors.
- The percentage value can adversely affect actual value sensing with synchronous motors. If the value is increased, this results in an increased motor power loss.

**Dependency:**
- Refer to: p9588
- Refer to: C01711

**Notice:**
- This parameter is only effective for encoderless actual value sensing (p9506/p9306 = 1, 3).

---

**Description:**
- Display to diagnose acceleration values of the encoderless actual values sensing.
- Shows the parameterized acceleration values of p9389/p9589.
- Shows the actually measured acceleration values of the encoderless actual value sensing

**Index:**
- [0] = Setpoint acceleration value
- [1] = Actual acceleration value

**Dependency:**
- Refer to: p9389, p9589
### r9784[0...1]
**SI Motion diagnostics acceleration encoderless / SI Mtn diag a sl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Display to diagnose acceleration values of the encoderless actual values sensing.</td>
<td>[0] = Setpoint acceleration value</td>
<td>Refer to: p9389, p9589</td>
</tr>
<tr>
<td></td>
<td>Shows the parameterized acceleration values of p9389/p9589.</td>
<td>[1] = Actual acceleration value</td>
<td></td>
</tr>
<tr>
<td>Re index 0</td>
<td>Shows the actually measured acceleration values of the encoderless actual value sensing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>[rev/s²]</td>
</tr>
<tr>
<td>Max</td>
<td>[rev/s²]</td>
</tr>
</tbody>
</table>

### r9785[0...1]
**SI Motion diagnostics absolute current value encoderless / SI Mtn diag I sl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Display to diagnose currents of the encoderless actual value sensing.</td>
<td>[0] = Minimum current parameterized</td>
<td>Refer to: p9388, p9588</td>
</tr>
<tr>
<td></td>
<td>Shows the parameterized minimum current of p9388/p9588.</td>
<td>[1] = Minimum current measured</td>
<td></td>
</tr>
<tr>
<td>Re index 0</td>
<td>Shows the actually measured current of the encoderless actual value sensing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Re index 1</td>
<td>Shows the actually measured current of the encoderless actual value sensing</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>[mA]</td>
</tr>
<tr>
<td>Max</td>
<td>[mA]</td>
</tr>
</tbody>
</table>

### r9786[0...2]
**SI Motion diagnostics plausibility angle value encoderless / SI mtn diag phi sl**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>Display to diagnose the plausibility angle of the encoderless actual value sensing.</td>
<td>[0] = Actual plausibility angle</td>
<td>Refer to: p9385, p9585</td>
</tr>
<tr>
<td></td>
<td>Shows the actual plausibility angle</td>
<td>[1] = Actual voltage angle</td>
<td></td>
</tr>
<tr>
<td>Re index 0</td>
<td>Shows the actual plausibility voltage angle</td>
<td>[2] = Actual current angle</td>
<td></td>
</tr>
<tr>
<td>Re index 1</td>
<td>Shows the actual current angle</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Access level</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>°</td>
</tr>
<tr>
<td>Max</td>
<td>°</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>
**r9787**

**SI Motion possible error tolerance sensorless / SI Mtn poss tol sl**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 3

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -

- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

- Min: - [mm/min]
- Max: - [mm/min]
- Factory setting: - [mm/min]

**Description:** Displays the actual velocity deviation of the encoderless actual value sensing that is obtained when setting p985/p985.

**Dependency:** Refer to: p9385, p9585

**Note:**
- For linear axes, the following unit applies: millimeters per minute
- For rotary axes, the following unit applies: revolutions per minute

**r9787**

**SI Motion possible error tolerance sensorless / SI Mtn poss tol sl**

**VECTOR_G (Safety rot)**

- Can be changed: -
- Calculated: -
- Access level: 3

- **Data type:** FloatingPoint32
- **Dynamic index:** -
- **Func. diagram:** -

- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

- Min: - [rpm]
- Max: - [rpm]
- Factory setting: - [rpm]

**Description:** Displays the actual velocity deviation of the encoderless actual value sensing that is obtained when setting p985/p985.

**Dependency:** Refer to: p9385, p9585

**Note:**
- For linear axes, the following unit applies: millimeters per minute
- For rotary axes, the following unit applies: revolutions per minute

**r9794[0...19]**

**SI crosswise comparison list (Control Unit) / SI CDC_list CU**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 3

- **Data type:** Unsigned16
- **Dynamic index:** -
- **Func. diagram:** 2802

- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

- Min: -
- Max: -
- Factory setting: -

**Description:** Displays the number of the data that are being presently compared crosswise on the Control Unit.

The content of the list of crosswise-compared data is dependent upon the particular application.

**Dependency:** Refer to: r9894

**Note:**
- Example:
  - r9794[0] = 1 (monitoring clock cycle)
  - r9794[1] = 2 (enable safety functions)
  - r9794[2] = 3 (F-DI changeover, tolerance time)

  ... A complete list of numbers for crosswise-compared data items appears in fault F01611.

**r9795**

**SI diagnostics STOP F (Control Unit) / SI diag STOP F CU**

**VECTOR_G**

- Can be changed: -
- Calculated: -
- Access level: 2

- **Data type:** Unsigned32
- **Dynamic index:** -
- **Func. diagram:** 2802

- **P-Group:** Safety Integrated
- **Units group:** -
- **Unit selection:** -

- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

- Min: -
- Max: -
- Factory setting: -

**Description:** Displays the number of the cross-compared data which has caused STOP F on the Control Unit.
### r9798  SI actual checksum SI parameters (Control Unit) / SI act_checksum CU

**VECTOR_G**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **P-Group:** Safety Integrated
- **Units group:** -
- **Function diagram:** 2800
- **Scaling:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**Description:**
Displays the checksum over the checked Safety Integrated parameters on the Control Unit (actual checksum).

**Dependency:**
- Refer to: p9799, r9898
- Refer to: p9801

### p9799  SI reference checksum SI parameters (Control Unit) / SI set_checksum CU

**VECTOR_G**

- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **P-Group:** Safety Integrated
- **Units group:** -
- **Function diagram:** 2800
- **Scaling:** -
- **Min:** 0000 hex
- **Max:** FFFF FFFF hex
- **Factory setting:** 0000 hex

**Description:**
Sets the checksum for the checked Safety Integrated parameters on the Control Unit (reference checksum).

**Dependency:**
- Refer to: r9798, p9899

### p9801  SI enable, functions integrated in the drive (Motor Module) / SI enable fct MM

**VECTOR_G**

- **Can be changed:** C2(95)
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned16
- **Dynamic index:** -
- **Unit selection:** -
- **Expert list:** 1
- **P-Group:** Safety Integrated
- **Units group:** -
- **Function diagram:** -
- **Scaling:** -
- **Min:** -
- **Max:** 0000 0000 bin
- **Factory setting:** -

**Description:**
Sets the enable signals for the safety functions integrated in the drive and the type of selection on the Motor Module.

Not all of the settings listed below will be permissible, depending on the Control Unit and Motor Module or Power Module being used:

- **0000 hex:**
  - Safety functions integrated in the drive inhibited (no safety function).
- **0001 hex:**
  - Basic functions are enabled via onboard terminals (permissible for r9871.0 = 1).
- **0004 hex:**
  - Extended functions via Terminal Module 54F (TM54F) have been enabled (permissible for r9871.5 = 1).
- **0005 hex:**
  - Extended functions via Terminal Module 54F (TM54F) and the basic functions via onboard terminals have been enabled (permissible for r9871.5 = 1).
- **0008 hex:**
  - Basic functions are enabled via PROFIsafe (permissible for r9871.6 = 1).
- **0009 hex:**
  - Basic functions are enabled via PROFIsafe onboard terminals (permissible for r9871.6 = 1).
- **000C hex:**
  - Extended functions are enabled via PROFIsafe (permissible for r9871.4 = 1).
- **000D hex:**
  - Extended functions are enabled via PROFIsafe and basic functions via onboard terminals (permissible for r9871.4 = 1).
0024 hex:
Extended functions without selection are enabled (permissible for r9871.16 = 1).

0025 hex:
Extended functions without selection and basic functions via onboard terminals are enabled (permissible for r9871.16 = 1).

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>00</td>
<td>STO (SH) via terminals (Motor Module) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>2810</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Enable drive_integ motion_monitoring functions (Motor Module) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>PROFIsafe (Motor Module) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>Enable drv_integ motion_mon fct w/o selection (Motor Module) enable</td>
<td>Enable</td>
<td>Inhibit</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p9601, r9871

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
MM: Motor Module.
SI: Safety Integrated.
SMM: Safe Motion Monitoring.
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204).
F-DI: Failsafe Digital Input.
F-DO: Failsafe Digital Output.

A change always becomes effective only after a POWER ON. Exception: Changes to p9801.0 become effective immediately.

### p9802
**SI enable Safe Brake Control (Motor Module) / SI enable SBC MM**
VECTOR_G

**Description:**
Sets the enable signal for the "Safe Brake Control" function (SBC) on the Motor Module.

0: Inhibit SBC
1: Enable SBC

**Dependency:**
Refer to: p9602

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
The "Safe Brake Control" function is not activated until at least one safety monitoring function has been enabled (i.e. p9801 not equal to 0 and/or p9801 not equal to 0).

It does not make sense to parameterize "no motor holding brake available" and enable "Safe Brake Control" (p1215 = 0, p9602 = p9802 = 1) if there is no motor holding brake.

The parameterization "motor holding brake the same as sequence control, connection via BICO" and "Safe Brake Control" enabled (p1215 = 3, p9602 = 1, p9802 = 1) is not practical.

It is not permissible to parameterize "motor holding brake without feedback signals" and also enable "safe brake control" (p1278 = 1, p9602 = 1, p9802 = 1).

MM: Motor Module
SBC: Safe Brake Control
SI: Safety Integrated
### Parameters

#### List of parameters

**p9810**

**SI PROFIsafe address (Motor Module) / SI PROFIsafe MM**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
<td>-</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFE hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:**
Sets the PROFIsafe address of the Motor Module.

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**p9811**

**SI PROFIsafe telegram selection (Motor Module) / SI Ps telegram MM**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
<td>-</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>998</td>
<td>998</td>
</tr>
</tbody>
</table>

**Description:**
Sets the PROFIsafe telegram number for the Motor Module.

**Value:**
- 0: No PROFIsafe telegram selected
- 30: PROFIsafe standard telegram 30, PZD-1/1
- 31: PROFIsafe standard telegram 31, PZD-2/2
- 901: PROFIsafe SIEMENS telegram 901, PZD-3/5
- 902: PROFIsafe SIEMENS telegram 902, PZD-3/6
- 998: Compatibility mode (as for firmware version < 4.5)

**Dependency:**
Refer to: p9611, p60022

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**p9821**

**BI: SI Safe Brake Adapter signal source (Motor Module) / SI SBA S_src MM**

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>C2(95)</td>
<td>3</td>
</tr>
<tr>
<td>Calculated</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
</tr>
<tr>
<td>Dynamic index</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Safety Integrated</td>
<td>-</td>
</tr>
<tr>
<td>Units group</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Scaling</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expert list</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for Safe Brake Adapter (SBA).

**Value:**
- 0: No Safe Brake Control (SBC) with Safe Brake Adapter (SBA) available.
- 9621/p9821 = r0722.x (x = 0, 1 ... 7)
- Safe Brake Adapter and Booksize unit (no Communication Interface Module (CIM)).
- Safe Brake Adapter and Chassis unit (CIM).

**Dependency:**
Refer to: p9601, p9802, p9821

**Notice:**
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

**Note:**
No difference is tolerated for a crosswise data comparison between p9621 and p9821.

To use the "Safe Brake Adapter" function the following must apply:
- p9601 = p9801 <> 0 and p9602 = p9802 = 1
### Description:
Sets the delay times for activating and de-activating the Safe Brake Adapter relay. The relay-specific minimum delay times for evaluating the feedback signal contacts have to be set. They differ for the activation and de-activation of one and the same relay.

### Index:
- \([0]\) = Wait time activation
- \([1]\) = Wait time deactivation

### Dependency:
Refer to: p9622

### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

### p9850 SI SGE changeover tolerance time (Motor Module) / SI SGE_chg tol MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2810</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>(\text{Min} )</td>
<td>(\text{Max} )</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>2000000.00 [µs]</td>
<td>0.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Sets the tolerance time to change over the safety-related inputs (SGE) on the Motor Module. An SGE changeover is not effective simultaneously due to the different runtimes in the two monitoring channels. After an SGE changeover, dynamic data is not subject to a crosswise data comparison during this tolerance time.

#### Dependency:
Refer to: p9650

#### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

#### Note:
For a crosswise data comparison between p9650 and p9850, a difference of one Safety monitoring clock cycle is tolerated. The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle.

SGE: Safety-related input (e.g. STO terminals)

### p9851 SI STO/SBC/SS1 debounce time (Motor Module) / SI STO t_debou MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>(\text{Min} )</td>
<td>(\text{Max} )</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>100000.00 [µs]</td>
<td>0.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

#### Description:
Sets the debounce time for the EP terminal of the Motor Module.

#### Notice:
This parameter is overwritten by the copy function of the safety functions integrated in the drive.

#### Note:
The debounce time is rounded to whole milliseconds. It specifies the maximum duration of a fault pulse at the fail-safe digital inputs with no reaction/influence on the selection or deselection of the Safety Basic Functions.

**Example:**
- Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
- Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
**Parameters**

**List of parameters**

**p9852**

**SI Safe Stop 1 delay time (Motor Module) / SI Stop 1 t_del MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9852</td>
<td>Sets the delay time of the pulse suppression for the function &quot;Safe Stop 1&quot; (SS1) on the Motor Module to brake along the OFF3 down ramp (p1135).</td>
<td>In order that the drive can completely ramp-down along the OFF3 ramp and a motor holding brake that is possibly available can close, then the delay time should be set as follows: Motor holding brake parameterized: delay time &gt;= p1135 + p1228 + p1217 Motor holding brake not parameterized: delay time &gt;= p1135 + p1228</td>
<td>Refer to: p1135, p9652</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
<td>For a crosswise data comparison between p9652 and p9852, a difference of one Safety monitoring clock cycle is tolerated. The parameterized time is rounded internally to an integer multiple of the monitoring clock cycle. SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)</td>
</tr>
</tbody>
</table>

**p9858**

**SI transition time STOP F to STOP A (Control Unit) / SI STOP F->A MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9858</td>
<td>Sets the transition period from STOP F to STOP A on the Motor Module.</td>
<td>Refer to: p9658, r9895</td>
<td>Refer to: F30611</td>
<td>This parameter is overwritten by the copy function of the safety functions integrated in the drive.</td>
</tr>
</tbody>
</table>

**r9870[0...3]**

**SI version drive-integrated safety function (Motor Module) / SI version MM**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9870[0...3]</td>
<td>Displays the Safety Integrated version for the drive-integrated safety functions on the Motor Module.</td>
<td>Refer to: r9770, r9890</td>
<td></td>
<td>r9870[0] = 2, r9870[1] = 60, r9870[2] = 1, r9870[3] = 0 --&gt; Safety version V02.60.01.00</td>
</tr>
</tbody>
</table>

**Index**

- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)
### r9871

#### SI common functions (Motor Module / SI general fct MM)

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 2804  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  
**Description:** Displays the Safety Integrated monitoring functions supported on the Control Unit and Motor Module.  
The Motor Module determines this display.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>STO supported via terminals</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>01</td>
<td>SBC supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>02</td>
<td>Extended Functions supported (p9501 &gt; 0)</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>03</td>
<td>SS1 supported</td>
<td>Yes</td>
<td>No</td>
<td>2804</td>
</tr>
<tr>
<td>04</td>
<td>Extended Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Extended Functions integrated in drive supported (p9601.2 = 1)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Basic Functions PROFIsafe supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Extended Functions encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Safe Brake Adapter supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Basic Functions PROFIsafe for parallel connection supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Extended Functions integrated in drive for parallel connection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Extended Functions SDI supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended Functions SSM encoderless supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>ESR delay of the pulse suppression</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>SBC for parallel connection supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>SLS limit, SP supported via PROFIsafe</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Safety functions w/out selection, SLP, SS1 supported w/out OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9771

**Note:**  
- MM: Motor Module  
- SBC: Safe Brake Control  
- SDI: Safe Direction (safe motion direction)  
- SLP: S Lable-Limited Position  
- SI: Safety Integrated  
- SP: Safe Position  
- SS1: Safe Stop 1  
- STO: Safe Torque Off / SH: Safe standstill  
- SSM: Safe Speed Monitor (safety-relevant feedback signal from the velocity monitoring) / SGA n < nx: Safety-related output n < nx  
- ESR: Extended Stop and Retract

### r9872.0...24

#### CO/BO: SI status list (Motor Module) / SI status MM

<table>
<thead>
<tr>
<th>VECTOR_G</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**Dynamic index:** -  
**Func. diagram:** 2804  
**P-Group:** Safety Integrated  
**Units group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  
**Description:** Displays the Safety Integrated status on the Motor Module.
**Parameters**

**List of parameters**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td></td>
<td>STO on Motor Module selected</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>01</td>
<td></td>
<td>STO on Motor Module active</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>02</td>
<td></td>
<td>SS1 delay time on Motor Module active</td>
<td>Yes</td>
<td>No</td>
<td>2810</td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Safe Brake Adapter feedback signal</td>
<td>Yes</td>
<td>No</td>
<td>2814</td>
</tr>
<tr>
<td>04</td>
<td></td>
<td>SBC requested</td>
<td>Yes</td>
<td>No</td>
<td>2814</td>
</tr>
<tr>
<td>05</td>
<td></td>
<td>SS1 selected on the Motor Module (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>SS1 active on the Motor Module (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td></td>
<td>STOP A cannot be acknowledged, active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>STOP A active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>STOP F active</td>
<td>Yes</td>
<td>No</td>
<td>2802</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>STO cause: Safety comm. mode</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td></td>
<td>STO cause selection via terminal (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td></td>
<td>STO cause: selection via SMM</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td></td>
<td>STO cause selection PROFIsafe (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>SS1 cause selection terminal (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td></td>
<td>SS1 cause selection PROFIsafe (Basic Functions)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td></td>
<td>Slave Motor Module ready for communication</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r9772

**Notice:** If communication between the Control Unit and the Motor Module is interrupted (e.g. by switching off the Motor Module), this display parameter is no longer updated. The last transferred status of the Motor Module is displayed.

**Note:**
- Re bit 00: When STO is selected, the cause is displayed in bits 16 ... 18 and in bit 20.
- Re bit 05: When SS1 is selected, the cause is displayed in bits 22 and 23.
- Re bit 18: When the bit is set, STO is selected via PROFIsafe or Terminal Module 54F (TM54F).
- SMM: Safe Motion Monitoring
  - Re bit 22, 23: These bits show via which path the SS1 was triggered, i.e. what has started the SS1 delay time.
  - If the SS1 delay time is not started (e.g. because an STO is triggered at the same time), neither of the two bits is set.
  - Re bit 24: Only for parallel connection and active motion monitoring functions: Slave Motor Module ready for communication

**r9880**

**SI monitoring clock cycle (Motor Module) / SI monitor_clck MM**

**VECTOR_G**

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**Dynamic index:** -

**Func. diagram:** 2802

**P-Group:** Safety Integrated

**Units group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min** | **Max** | **Factory setting**
--- | --- | ---
- [ms] | - [ms] | - [ms]

**Description:** Displays the clock cycle time for the Safety Integrated Basic Functions on the Motor Module.

**Dependency:** Refer to: r0110, p0115, r9780
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9881[0...11]</td>
<td>SI Motion Sensor Module Node Identifier second channel / SI Mtn SM Ident</td>
</tr>
<tr>
<td>r9890[0...2]</td>
<td>SI version (Sensor Module) / SI version SM</td>
</tr>
<tr>
<td>r9894[0...19]</td>
<td>SI crosswise comparison list (Motor Module) / SI CDC_list MM</td>
</tr>
<tr>
<td>r9895</td>
<td>SI diagnostics STOP F (Motor Module) / SI diag STOP F MM</td>
</tr>
</tbody>
</table>

#### r9881[0...11] - SI Motion Sensor Module Node Identifier second channel / SI Mtn SM Ident

<table>
<thead>
<tr>
<th>Value</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the Node Identifier of the Sensor Module that the second channel uses for the motion monitoring functions.

**Index:**
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)

**Dependency:** Refer to: r9770, r9870

**Note:** Example:
r9890[0] = 2, r9890[1] = 3, r9890[2] = 1 --> Safety-Version V02.03.01

#### r9890[0...2] - SI version (Sensor Module) / SI version SM

<table>
<thead>
<tr>
<th>Value</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the Safety Integrated version on the Sensor Module.

**Index:**
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)

**Dependency:** Refer to: r9770, r9870

**Note:** Example:
r9890[0] = 2, r9890[1] = 3, r9890[2] = 1 --> Safety-Version V02.03.01

#### r9894[0...19] - SI crosswise comparison list (Motor Module) / SI CDC_list MM

<table>
<thead>
<tr>
<th>Value</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>2802</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the number of the data that are being presently compared crosswise on the Motor Module.

**Dependency:** Refer to: r9794

**Note:** Example:
r9894[0] = 1 (monitoring clock cycle)
r9894[1] = 2 (enable safety functions)
r9894[2] = 3 (F-DI changeover, tolerance time)

... The complete list of numbers for crosswise data comparison is listed in Fault F30611.

#### r9895 - SI diagnostics STOP F (Motor Module) / SI diag STOP F MM

<table>
<thead>
<tr>
<th>Value</th>
<th>Type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>2</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>2802</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the number of the cross-compared data which has caused STOP F on the Motor Module.

**Dependency:** Refer to: r9795

**Note:** Example:
Refer to: F30611
**Parameters**

**List of parameters**

---

**Note:**

The complete list of numbers for crosswise data comparison is listed in Fault F30611.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Unit Selection</th>
<th>Data Type</th>
<th>Min</th>
<th>Max</th>
<th>Data Type</th>
<th>Min</th>
<th>Max</th>
<th>Data Type</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9897</td>
<td>SI Motion pulse suppression failsafe delay time (MM) / SI Mtn IL t_del MM</td>
<td>Sets the delay time for the pulse suppression after bus failure via failsafe values on the Motor Module (e.g. used for ESR).</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [µs]</td>
<td>800000.00 [µs]</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r9898</td>
<td>SI actual checksum SI parameters (Motor Module) / SI act_checksum MM</td>
<td>Displays the checksum for the checked Safety Integrated parameters on the Motor Module (actual checksum).</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p9899</td>
<td>SI reference checksum SI parameters (Motor Module) / SI set_checksum MM</td>
<td>Sets the checksum for the checked Safety Integrated parameters on the Motor Module (reference checksum).</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r9900</td>
<td>Actual topology number of indices / Act topo indices</td>
<td>Displays the number of indices of the actual topology.</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

---

**Note:**

ESR: Extended Stop and Retract

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Description:
Displays the actual topology of the drive unit. The actual topology is sub-divided into several sections. Each of the following data is saved under an index.

General data on the topology:
- version
- attribute to compare the actual topology and target topology
- number of components

Data on a component:
- type component of the node ID of the component
- number of DRIVE-CLiQ sockets in the Node Identifier
- manufacturer and version of the Node Identifier
- serial number of the Node Identifier (4 indices)
- index of the component
- order number (8 indices)
- attribute to compare the actual topology and target topology of the component
- communications address
- number of port types
- port type
- number of ports of the port type
- communications address of the associated/linked component
- number of the associated/linked port
- communications address of the associated/linked component
- number of the associated port, etc.

Data on the next component:
- etc.

### Dependency:
Refer to: r9900

### Note:
Only for internal Siemens use.
The parameter is not displayed for the STARTER commissioning software.

---

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Dynamic index</th>
<th>Units group</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9901[0...n]</td>
<td>Actual topology / Act topo</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>r9900</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p9902</td>
<td>Target topology number of indices / TargetTopo indices</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>65535</td>
<td>1</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>p9903[0...n]</th>
<th><strong>Target topology / Target topo</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>: Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>: Topology</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>: 0000 hex</td>
</tr>
</tbody>
</table>

**Description:**
Sets the target topology of the drive unit.

The target topology is sub-divided into several sections. Each of the following data is saved under an index.

**General data on the topology:**
- version
- attribute to compare the actual topology and target topology
- number of components

**Data on a component:**
- type component of the Node Identifier of the component
- number of DRIVE-CLiQ sockets in the Node Identifier
- manufacturer and version of the Node Identifier
- serial number of the Node Identifier (4 indices)
- index of the component
- order number (8 indices)
- attribute to compare the actual topology and target topology of the component
- component number
- number of port types
- port type
- number of ports of the port type
- component number of the associated/linked component
- number of the associated/linked port
- component number of the associated/linked component
- number of the associated port, etc.

**Data on the next component:**
- etc.

#### Dependency:
Refer to: p9902

#### Note:
The target topology can only be modified using the commissioning software.
The parameter is not displayed for the STARTER commissioning software.
Changes only become effective when the state of p0009 = 101 changes to 0 or 111.

<table>
<thead>
<tr>
<th>p9904</th>
<th><strong>Topology comparison, acknowledge differences / Topo_compare ackn</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>: C1(1)</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>: Unsigned32</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>: Topology</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>: 0000 hex</td>
</tr>
</tbody>
</table>

**Description:**
If, when comparing the actual topology and target topology, only error has occurred, that can be acknowledged, then using this parameter, a new comparison can be started - acknowledging the error in the target topology.

Differences that can be acknowledged:
- topology comparison, component shifted
- topology comparison, serial number of a component has been detected to be different (byte 3 = 1)
- topology comparison shows one component that is connected differently
The following parameter values are available:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9904 = 1</td>
<td>The procedure is started.</td>
</tr>
<tr>
<td>p9904 = 0</td>
<td>The procedure has been successfully completed.</td>
</tr>
<tr>
<td>p9904 = 1</td>
<td>The procedure has not been successfully completed.</td>
</tr>
</tbody>
</table>

The possible causes for an unsuccessful procedure are located in bytes 4, 3, 2.

**Byte 2:**
Number of structural differences.

**Byte 3:**
Number of differences that can be acknowledged (p9904).

**Byte 4:**
Number of differences. These differences can be resolved as follows:
- sets the topology comparison (p9906 or p9907/p9908).
- change over the actual topology.

The appropriate action should be selected corresponding to the message that is displayed/output.

**Note:**
In order to permanently accept the acknowledgement of the fault that can be resolved, then it must be saved in a non-volatile fashion (p0977).

### p9905 Device specialization / Specialization

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C1(1)</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Topology</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>2</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Access level:** 3

**Description:**
With p9905 = 1, the serial numbers and the hardware versions of all of the components are transferred from the actual topology into the target topology and a new comparison is started.

For this device specialization, the components of the target topology may only differ from those of the actual topology by the serial numbers.

With p9905 = 2, the serial numbers, the hardware versions and the order numbers of all of the components are transferred from the actual topology into the target topology and a new comparison is started.

For this device specialization, the components of the target topology may only differ from those of the actual topology by the serial numbers and order numbers.

**Note:**
- p9905 is automatically set to 0 at the end of the operation.
- In order to permanently accept the data, it is necessary to save in a non-volatile fashion (p0977).

### p9906 Topology comparison, comparison stage of all components / Topo_cmpr tot comp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>C1(1)</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Topology</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
</tr>
<tr>
<td>Max</td>
<td>99</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Access level:** 3

**Description:**
Sets the type of comparison between the actual topology and target topology.

The comparison is started by setting the required value.

**Value:**
0: High: Compares the complete electronic rating plate
1: Average: Compares the component type and the Order number
2: Low: Compares the component type
3: Minimum: Compares the component class
99: Topology has different comparison stages

**Note:**
The electronic rating plate comprises the following data:
- component type (e.g. "SMC20")
- Order No. (e.g. "6SL3055-0AA0-5BA0")
- manufacturer (e.g. SIEMENS)
### Parameters

#### List of parameters

- hardware version (e.g. "A")
- Serial No. (e.g. "T-P30050495")

When comparing the topology, the following data is compared in the target and actual topologies:

- **p9906 = 0**: Component type, Order No., Hardware version, Manufacturer, Serial No.
- **p9906 = 1**: Component type, Order No.
- **p9906 = 2**: Component type
- **p9906 = 3**: Component class (e.g. Sensor Module or Motor Module)

| **p9907** Topology comparison, comparison stage of the component number / Topo_cmpr comp_no |
|----------------------------------|------------------|------------------|
| **CU_G130_DP,**                  | Can be changed: C1(1)  |
| **CU_G130_PN,**                  | Calculated: -            |
| **CU_G150_DP,**                  | Access level: 3           |
| **CU_G150_PN**                   | Data type: Unsigned8      |
| **P-Group:** Topology            | Dynamic index: -         |
| **Not for motor type:** -        | Unit group: -             |
| **Scaling:** -                   | Unit selection: -         |
| **Min**                          | Expert list: 1           |
| **Max**                          | Factory setting          |
| **0**                            | 199                      |
| **99**                           | 0                        |

#### Description:

Enters the number of the component where the setting of how the actual topology should be compared to the target topology should be changed.

#### Dependency:

Refer to: p9908

| **p9908** Topology comparison, comparison stage of a component / Topo_cmpr 1 comp |
|----------------------------------|------------------|------------------|
| **CU_G130_DP,**                  | Can be changed: C1(1)  |
| **CU_G130_PN,**                  | Calculated: -            |
| **CU_G150_DP,**                  | Access level: 3           |
| **CU_G150_PN**                   | Data type: Integer16     |
| **P-Group:** Topology            | Dynamic index: -         |
| **Not for motor type:** -        | Unit group: -             |
| **Scaling:** -                   | Unit selection: -         |
| **Min**                          | Expert list: 1           |
| **Max**                          | Factory setting          |
| **0**                            | 99                       |
| **99**                           | 0                        |

#### Description:

Sets the type of comparison of a component in the target topology with the actual topology.

The comparison is started by setting the required value.

#### Value:

- **0**: High: Compares the complete electronic rating plate
- **1**: Average: Compares the component type and the Order number
- **2**: Low: Compares the component type
- **3**: Minimum: Compares the component class
- **99**: Topology has different comparison stages

#### Dependency:

Refer to: p9907

#### Note:

The electronic rating plate comprises the following data:

- component type (e.g. "SMC20")
- Order No. (e.g. "6SL3055-0AA0-5BA0")
- manufacturer (e.g. SIEMENS)
- hardware version (e.g. "A")
- Serial No. (e.g. "T-P30050495")

When comparing the topology, the following data is compared in the target and actual topologies:

- **p9908 = 0**: Component type, Order No., Hardware version, Manufacturer, Serial No.
- **p9908 = 1**: Component type, Order No.
- **p9908 = 2**: Component type
- **p9908 = 3**: Component class (e.g. Sensor Module or Motor Module)
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9909</td>
<td>Topology comparison, component replacement / Topo_cmpr replace</td>
<td>Can be changed: C1(1)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
For p9909 = 1, the serial number and the hardware version of the new replaced component is automatically transferred from the actual topology into the target topology and then saved in a non-volatile fashion.

For the components that have been replaced, the electronic rating plate must match as far as the following data is concerned:
- component type (e.g. "SMC20")
- Order No. (e.g. "6SL3055-0AA0-5BA0")

For p9909 = 0, serial numbers and hardware versions are not automatically transferred. In this case, the transfer must be made using p9904.

**Dependency:**
Refer to: p9904, p9905

**Note:**
The modified target topology is automatically saved in a non-volatile fashion when the drive object runs-up (e.g. after a POWER ON).

Special case for Control Unit and option slot modules:
When replacing these components, independent of p9909, the serial number and hardware version are automatically transferred and saved in a non-volatile fashion.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9910</td>
<td>Transfer additional components into the target topology / Transfer comp</td>
<td>Can be changed: C1(1)</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Access level: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>6</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Transfer additional inserted DRIVE-CLiQ components into the target topology and add the appropriate drive objects to the project.

**Value:**
0: No selection
1: Drive object type SERVO
2: Drive object type VECTOR
3: SINAMICS GM (DFEMV & VECTORMV)
4: SINAMICS SM (AFEMV & VECTORMV)
5: SINAMICS GL (VECTORGL)
6: SINAMICS SL (VECTORSL)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9911[0...3]</td>
<td>Insert drive object / Drv_obj insert</td>
<td>Can be changed: C1(1)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Expert list: 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4294967295</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
New drive objects can be created using this parameter.

Index 0:
The values 2 ... 62 are permissible.

Index 1:
Number of the drive object type (e.g. 11 for type SERVO).

Index 2:
Function modules defined for the drive object.
Parameters

List of parameters

Index 3:
= 0: Ready.
= 1: Reset (only indices 0 ... 3).
= 2: Reset all (indices 0 ... 3 and flagged entries).
= 3: Check and flag for insertion.

Index:
[0] = Drive object number
[1] = Drive object type
[2] = Drive object function module
[3] = Reset or check and flag for insertion

Note:
Only for internal Siemens use.
The parameter is not displayed for the STARTER commissioning software.

p9912[0...1] Delete drive object / Drv_obj delete

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: C1(3) Data type: Unsigned16 P-Group: - Not for motor type: -
Calculated: - Dynamic index: - Units group: - Scaling: -
Access level: 3 Func. diagram: - Unit selection: - Expert list: -
Data type:
Unsigned16
Dynamic index:
- Units group:
- Scaling:
- Access level:
3 Func. diagram:
- Unit selection:
- Expert list:
- Description:
Drive objects can be deleted using this parameter.
Index 0:
The values 2 ... 62 are permissible.
Index 1:
= 0: Ready.
= 1: Reset (only indices 0 and 1)
= 2: Reset all (indices 0 and 1 and flagged entries).
= 3: Check and flag for deletion.
= 30: Check and flag for deletion. Keep target topology.

Index:
[0] = Drive object number
[1] = Reset or check and flag for deletion
Note:
Only for internal Siemens use.
The parameter is not displayed for the STARTER commissioning software.

p9913[0...2] Change drive object number / Change drv_obj_no

CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN
Can be changed: C1(4) Data type: Unsigned16 P-Group: - Not for motor type: -
Calculated: - Dynamic index: - Units group: - Scaling: -
Access level: 3 Func. diagram: - Unit selection: - Expert list: 1
Data type:
Unsigned16
Dynamic index:
- Units group:
- Scaling:
- Access level:
3 Func. diagram:
- Unit selection:
- Expert list:
1 Description:
Existing drive objects can be assigned new numbers using these parameters.
Index 0:
The values 2 ... 62 are permissible.
Index 1:
The values 2 ... 62 are permissible.
Index 2:
= 0: Ready.
= 1: Reset (only indices 0 ... 2).
= 2: Reset all (indices 0 ... 2 and flagged entries).
= 3: Check and flag for modification.

Index:
[0] = Drive object number old
[1] = Drive object number new
[2] = Reset or check and flag for modification
Note: Only for internal Siemens use.
The parameter is not displayed for the STARTER commissioning software.

**p9914[0...2]** Change component number / Change comp_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: C1</td>
<td>Calculated: -</td>
<td>3</td>
<td>You can change the number of topology components using this parameter.</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td>Index 0: The values 2 ... 199 are permissible.</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>4</td>
<td>Index 1: The values 2 ... 199 are permissible.</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Access level: 3</td>
<td>Index 2: = 0: Ready.</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>= 1: Reset (only indices 0 ... 2).</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>199</td>
<td></td>
<td>= 2: Reset all (indices 0 ... 2 and flagged entries).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>= 3: Check and flag for modification.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Index: [0] = Component number old</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[1] = Component number new</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[2] = Reset or check and flag for modification.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note: Only for internal Siemens use.</td>
</tr>
</tbody>
</table>

**p9915** DRIVE-CLIQ data transfer error shutdown threshold master / DLQ fault master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: C1(1)</td>
<td>Calculated: -</td>
<td>4</td>
<td>Only for internal Siemens service purposes.</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0000 hex 0007 07FF hex</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0007 02FF hex</td>
</tr>
</tbody>
</table>

**p9916** DRIVE-CLIQ data transfer error shutdown threshold slave / DLQ fault slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: C1(1)</td>
<td>Calculated: -</td>
<td>4</td>
<td>Only for internal Siemens service purposes.</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: Topology</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0000 hex 0007 07FF hex</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0007 02FF hex</td>
</tr>
</tbody>
</table>

**p9917[0...1]** Delete component / Delete comp

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Calculated</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: C1(30)</td>
<td>Calculated: -</td>
<td>3</td>
<td>Excessive components that have not been assigned can be removed from the</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Data type: Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td>component target topology using this parameter.</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>199</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>
### List of parameters

**Index 0:**
- The values 2 ... 199 are permissible.

**Index 1:**
- 0: Ready.
- 1: Reset (only indices 0 and 1)
- 2: Reset all (indices 0 and 1 and flagged entries).
- 3: Check and flag for deletion.

**Index:**
- [0] = Component number
- [1] = Reset or check and flag for deletion

**Note:**
- Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning software.

---

<table>
<thead>
<tr>
<th>p9920[0...99]</th>
<th>Licensing, enter license key / Enter license key</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>CU_G130_PN,</strong></td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>CU_G150_DP,</strong></td>
<td>Access level: 2</td>
</tr>
<tr>
<td><strong>CU_G150_PN</strong></td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Units group: -</td>
</tr>
<tr>
<td><strong>Unsigned8</strong></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Expert selection: 1</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>-</strong></td>
<td><strong>Index 0 = license key character 1 (e.g. 69 dec)</strong></td>
</tr>
<tr>
<td><strong>...</strong></td>
<td><strong>Index 8 = license key character 9 (e.g. 65 dec)</strong></td>
</tr>
<tr>
<td><strong>...</strong></td>
<td><strong>Index 9 = license key character 10 (e.g. 0 dec)</strong></td>
</tr>
</tbody>
</table>

**Description:**
- Enters the license key for this drive unit.
- Example of the license key:
  - EACZ-QBCA = 69 65 67 90 45 81 66 67 65 dec (ASCII characters)
  - Index 0 = license key character 1 (e.g. 69 dec)
  - Index 1 = license key character 2 (e.g. 65 dec)
  - ...
  - Index 8 = license key character 9 (e.g. 65 dec)
  - Index 9 = license key character 10 (e.g. 0 dec)

**Dependency:**
- Refer to: r7843, p9921
- Refer to: A13000, A13001, F13010

**Notice:**
- An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
- With the STARTER commissioning software, ASCII characters are not entered coded, i.e. the characters of the license key can be entered as printed in the Certificate of License. In this case, STARTER codes the characters.

**Note:**
- For an invalid license key, all the indices have the value 0 dec.
- Only the ASCII characters contained in a license key can be entered ("1" to "9", "A" to "H", "K" to "N", "P" to "Z" as well as ".").
- When manually changing p9920[x] to the value 0 dec, all the values of all the following indices are also set to 0 dec.
- After entering the license key, the license key must be activated (p9921).
- If the licensing is not adequate, then the following alarm is displayed together with LED:
  - A13000 --> licensing not sufficient
  - LED READY --> flashes green/red with 0.5 Hz

---

<table>
<thead>
<tr>
<th>p9921</th>
<th>Licensing, activate license key / Act license key</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_G130_DP,</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>CU_G130_PN,</strong></td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>CU_G150_DP,</strong></td>
<td>Access level: 2</td>
</tr>
<tr>
<td><strong>CU_G150_PN</strong></td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Units group: -</td>
</tr>
<tr>
<td><strong>Integer16</strong></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>-</strong></td>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>-</strong></td>
<td><strong>0</strong></td>
</tr>
</tbody>
</table>

**Description:**
- Activates the entered license key.
- The following is executed when activating the license key.
- the checksum of the entered license key is checked.
- the entered license key is saved in a non-volatile fashion on the memory card.
- re-enter the license key.

Value:
0: Inactive
1: Activate start license key

Dependency:
Refer to: p9920
Refer to: A13000, A13001, F13010

Note:
Before activation, the license key entered using parameter p9920 is checked. If this check identifies an error, activation is rejected. In this case, writing a 1 to p9921 is rejected.
When the license key has been activated, p9921 is automatically set to 0.

**r9925[0...99]** Firmware file incorrect / FW file incorr

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
<td>Displays the directory and name of the file whose status as shipped from the factory was identified as impermissibe.</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Dependency:
Refer to: r9926
Refer to: A01016

Note:
The directory and name of the file is displayed in the ASCII code.

**r9926** Firmware check status / FW check status

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
<td>Displays the status when the firmware is checked when the system is booted.</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Calculated: -</td>
<td>0: Firmware not yet checked.</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dynamic index: -</td>
<td>1: Check running.</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
<td>2: Check successfully completed.</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>3: Check indicates an error.</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Dependency:
Refer to: r9925
Refer to: A01016

**p9930[0...8]** System logbook activation / SYSLOG activation

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dynamic index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Min Max Factory setting

Index:
[0] = System logbook stage (0: Not active)
[1] = COM2/COM1 (0: COM2, 1: COM1)
[2] = Activate file write (0: Not active)
[3] = Display time stamp (0: Not displayed)
[4...7] = Reserved
[8] = System logbook file size (stages, each 10 kB)
**Parameters**

**List of parameters**

**Notice:**
Before powering down the Control Unit, ensure that the system logbook is switched out (p9930[0] = 0). If writing to the file is activated (p9930[2] = 1), writing to the file must be de-activated again before switching off the Control Unit (p9930[2] = 0) in order to ensure that the system logbook has been completely written to the file.

**p9931[0...129]**  
**System logbook module selection / SYSLOG mod select.**

<table>
<thead>
<tr>
<th>Module</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>U, T</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

**Description:**  
Only for service purposes.

**p9932**  
**Save system logbook EEPROM / SYSLOG EEPROM save**

<table>
<thead>
<tr>
<th>Module</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>U, T</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  
Only for service purposes.

**r9935.0**  
**BO: POWER ON delay signal / POWER ON t_delay**

<table>
<thead>
<tr>
<th>Module</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>-</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**  
After power-on, binector output r9935.0 is set with the start of the first sampling time and is again reset after approx. 100 ms.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>POWER ON delay signal</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**p9941**  
**Target topology feature delete all components / Feature delete**

<table>
<thead>
<tr>
<th>Module</th>
<th>Can be changed</th>
<th>Data type</th>
<th>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>C1(1)</td>
<td>Unsigned32</td>
<td>Topology</td>
<td>-</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**  
For p9941 =1, the serial numbers of all components in the target topology are deleted (zero is written). Through activation and de-activation this enables the actual topology components to be newly assigned to the target topology components.

**Note:**  
p9941 is automatically set to 0 at the end of the operation.
A warm restart is triggered automatically after p0009 = 0.
**Parameters**

**List of parameters**

---

**r9975[0...7] System utilization measured / Sys util meas**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
<td>Refer to: r9976, r9979, r9980, r9981</td>
</tr>
</tbody>
</table>

**Index:**

- \[0\] = Computing time utilization (min)
- \[1\] = Computing time utilization (averaged)
- \[2\] = Computing time utilization (max)
- \[3\] = Largest total utilization (min)
- \[4\] = Largest total utilization (averaged)
- \[5\] = Largest total utilization (max)
- \[6\] = Reserved
- \[7\] = Reserved

**Dependency:**

Refer to: r9976, r9979, r9980, r9981
Refer to: F01054, F01205

**Note:**

- Re index 3 ... 5: The total utilizations are determined using all sampling times used. The largest total utilizations are mapped here. The sampling time with the largest total utilization is displayed in r9979. Total utilization: Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

**Min**

- \([-\%]\)

**Max**

- \([-\%]\)

**System utilization / Sys util**

---

**r9976[0...7] System utilization / Sys util**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Refer to: r9976, r9979, r9980</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [-%]</td>
<td>- [-%]</td>
<td>- [-%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

- Displays the system utilization.
- If the utilization is greater than 100%, fault F01054 is output.

**Index:**

- \[0\] = Reserved
- \[1\] = Computing time utilization
- \[2\] = Reserved
- \[3\] = Reserved
- \[4\] = Reserved
- \[5\] = Largest total utilization
- \[6\] = Reserved
- \[7\] = Reserved

**Dependency:**

Refer to: r9979, r9980
Refer to: F01054, F01205

**Note:**

- Re index 1: The value shows the total computing time load of the system. Re index 5: The total utilization is determined using all sampling times used. The largest total utilization is mapped here. The sampling time with the largest total utilization is displayed in r9979. Total utilization: Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).
Parameters

List of parameters

<table>
<thead>
<tr>
<th>r9979</th>
<th>Sampling time with largest total utilization / t_sampl lg total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: FloatingPoint32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: - Units group: - Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
</tbody>
</table>

Description: Displays the sampling time with the largest total utilization.

Dependency:
- Refer to: r7901, r9976
- Refer to: F01054

Note:
- The largest total utilization is displayed in r9976[5].
- Total utilization: Computing total load of sampling time involved including load from higher-priority sampling times (interrupts).

<table>
<thead>
<tr>
<th>r9980[0...101]</th>
<th>Sampling times utilization calculated / t_sampl util calc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: FloatingPoint32 Dynamic index: - Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: - Units group: - Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: - Scaling: - Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Min - [%] Max - [%] Factory setting - [%]</td>
</tr>
</tbody>
</table>

Description: Displays the calculated utilizations for the active sampling times based on the existing target topology.

Index:
- [0] = Net utilization 0
- [1] = Total utilization 0
- [2] = Net utilization 1
- [3] = Total utilization 1
- [5] = Total utilization 2
- [6] = Net utilization 3
- [7] = Total utilization 3
- [8] = Net utilization 4
- [9] = Total utilization 4
- [10] = Net utilization 5
- [12] = Net utilization 6
- [13] = Total utilization 6
- [14] = Net utilization 7
- [15] = Total utilization 7
- [16] = Net utilization 8
- [17] = Total utilization 8
- [18] = Net utilization 9
- [19] = Total utilization 9
- [20] = Net utilization 10
- [21] = Total utilization 10
- [22] = Net utilization 11
- [23] = Total utilization 11
- [24] = Net utilization 12
- [25] = Total utilization 12
- [26] = Net utilization 13
- [27] = Total utilization 13
- [28] = Net utilization 14
- [29] = Total utilization 14
- [30] = Net utilization 15
- [31] = Total utilization 15
- [32] = Net utilization 16
- [33] = Total utilization 16
- [34] = Net utilization 17
- [35] = Total utilization 17
Parameters
List of parameters

[36] = Net utilization 18
[37] = Total utilization 18
[38] = Net utilization 19
[39] = Total utilization 19
[40] = Net utilization 20
[41] = Total utilization 20
[42] = Net utilization 21
[43] = Total utilization 21
[44] = Net utilization 22
[45] = Total utilization 22
[46] = Net utilization 23
[47] = Total utilization 23
[48] = Net utilization 24
[49] = Total utilization 24
[50] = Net utilization 25
[51] = Total utilization 25
[52] = Net utilization 26
[53] = Total utilization 26
[54] = Net utilization 27
[55] = Total utilization 27
[56] = Net utilization 28
[57] = Total utilization 28
[58] = Net utilization 29
[59] = Total utilization 29
[60] = Net utilization 30
[61] = Total utilization 30
[62] = Net utilization 31
[63] = Total utilization 31
[64] = Net utilization 32
[65] = Total utilization 32
[66] = Net utilization 33
[67] = Total utilization 33
[68] = Net utilization 34
[69] = Total utilization 34
[70] = Net utilization 35
[71] = Total utilization 35
[72] = Net utilization 36
[73] = Total utilization 36
[74] = Net utilization 37
[75] = Total utilization 37
[76] = Net utilization 38
[77] = Total utilization 38
[78] = Net utilization 39
[79] = Total utilization 39
[80] = Net utilization 40
[81] = Total utilization 40
[82] = Net utilization 41
[83] = Total utilization 41
[84] = Net utilization 42
[85] = Total utilization 42
[86] = Net utilization 43
[87] = Total utilization 43
[88] = Net utilization 44
[89] = Total utilization 44
[90] = Net utilization 45
[91] = Total utilization 45
[92] = Net utilization 46
[93] = Total utilization 46
[94] = Net utilization 47
[95] = Total utilization 47
[96] = Net utilization 48
[97] = Total utilization 48
[98] = Net utilization 49
[99] = Total utilization 49
Parameters

List of parameters

[100] = Net utilization 50
[101] = Total utilization 50

Dependency:
Refer to: r7901, r9976, r9979
Refer to: F01054

Note:
The corresponding sampling times can be read out in parameter r7901.
Net utilization:
Computing time load that is only called by the sampling time involved.
Total utilization:
Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

<table>
<thead>
<tr>
<th>r9981[0...101]</th>
<th>Sampling times utilization measured / t_sampl util meas</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>CU_G150_DP,</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Units group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>[%]</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>[%]</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Displays the utilizations measured for the active sampling times.

Index:
[0] = Net utilization 0
[1] = Total utilization 0
[2] = Net utilization 1
[3] = Total utilization 1
[5] = Total utilization 2
[7] = Total utilization 3
[8] = Net utilization 4
[9] = Total utilization 4
[10] = Net utilization 5
[12] = Net utilization 6
[14] = Net utilization 7
[16] = Net utilization 8
[17] = Total utilization 8
[18] = Net utilization 9
[19] = Total utilization 9
[20] = Net utilization 10
[21] = Total utilization 10
[22] = Net utilization 11
[23] = Total utilization 11
[24] = Net utilization 12
[25] = Total utilization 12
[26] = Net utilization 13
[27] = Total utilization 13
[28] = Net utilization 14
[29] = Total utilization 14
[30] = Net utilization 15
[31] = Total utilization 15
[32] = Net utilization 16
[33] = Total utilization 16
[34] = Net utilization 17
[35] = Total utilization 17
[36] = Net utilization 18
[37] = Total utilization 18
[38] = Net utilization 19
[39] = Total utilization 19
[40] = Net utilization 20
[41] = Total utilization 20
Parameters

List of parameters

[42] = Net utilization 21
[43] = Total utilization 21
[44] = Net utilization 22
[45] = Total utilization 22
[46] = Net utilization 23
[47] = Total utilization 23
[48] = Net utilization 24
[49] = Total utilization 24
[50] = Net utilization 25
[51] = Total utilization 25
[52] = Net utilization 26
[53] = Total utilization 26
[54] = Net utilization 27
[55] = Total utilization 27
[56] = Net utilization 28
[57] = Total utilization 28
[58] = Net utilization 29
[59] = Total utilization 29
[60] = Net utilization 30
[61] = Total utilization 30
[62] = Net utilization 31
[63] = Total utilization 31
[64] = Net utilization 32
[65] = Total utilization 32
[66] = Net utilization 33
[67] = Total utilization 33
[68] = Net utilization 34
[69] = Total utilization 34
[70] = Net utilization 35
[71] = Total utilization 35
[72] = Net utilization 36
[73] = Total utilization 36
[74] = Net utilization 37
[75] = Total utilization 37
[76] = Net utilization 38
[77] = Total utilization 38
[78] = Net utilization 39
[79] = Total utilization 39
[80] = Net utilization 40
[81] = Total utilization 40
[82] = Net utilization 41
[83] = Total utilization 41
[84] = Net utilization 42
[85] = Total utilization 42
[86] = Net utilization 43
[87] = Total utilization 43
[88] = Net utilization 44
[89] = Total utilization 44
[90] = Net utilization 45
[91] = Total utilization 45
[92] = Net utilization 46
[93] = Total utilization 46
[94] = Net utilization 47
[95] = Total utilization 47
[96] = Net utilization 48
[97] = Total utilization 48
[98] = Net utilization 49
[99] = Total utilization 49
[100] = Net utilization 50
[101] = Total utilization 50

Dependency:
Refer to: r7901, r9975, r9980
Refer to: F01054
### List of parameters

**Note:**
- The corresponding sampling times can be read out in parameter r7901.
- Computing time load that is only called by the sampling time involved.

**Total utilization:**
- Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

#### r9982[0...4]
**Data memory utilization / Mem_util_dat_mem**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Displays the calculated data memory utilization rates based on the existing target topology.</td>
<td>[0] = Fast data memory 1</td>
<td>Refer to: F01068</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td>[1] = Fast data memory 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[4] = Reserved</td>
<td></td>
</tr>
</tbody>
</table>

#### r9983[0...4]
**Measured data memory utilization (actual load) / Mem_ut_dat_mem ms**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Displays the measured data memory utilization rates based on the existing target topology.</td>
<td>[0] = Fast Memory 1</td>
<td>Refer to: F01068</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td>[1] = Fast Memory 2</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td>[3] = Fast Memory 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[4] = Heap</td>
<td></td>
</tr>
</tbody>
</table>

#### r9984[0...4]
**Data memory utilization OA / Mem_ut_dat_mem OA**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_G130_DP,</td>
<td>Displays the utilization of the data memory by OA applications.</td>
<td>[0] = Fast Memory 1</td>
<td>Refer to: F01068</td>
</tr>
<tr>
<td>CU_G130_PN,</td>
<td></td>
<td>[1] = Fast Memory 2</td>
<td></td>
</tr>
<tr>
<td>CU_G150_PN</td>
<td></td>
<td>[3] = Fast Memory 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[4] = Reserved</td>
<td></td>
</tr>
</tbody>
</table>
### List of parameters

#### Description:
Displays the calculated DRIVE-CLiQ system load based on the existing target topology. The values are not made available until the RUNUP READY (800) state is adopted (see p3988). Index 0 ... 7 corresponds to DRIVE-CLiQ socket X100 ... X107.

#### Dependency:
Refer to: F01340

#### Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9986[0...7]</td>
<td>DRIVE-CLiQ system load / DQ system load</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p9990</td>
<td>DO memory usage actual value determination selection / Mem_use ActVal sel</td>
<td>U, T</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>r9987[0...7]</td>
<td>DRIVE-CLiQ bandwidth load / DQ bandw load</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>r9988[0...7]</td>
<td>DRIVE-CLiQ DPRAM load / DQ DPRAM load</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Example:

**CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**

<table>
<thead>
<tr>
<th>Data type: FloatingPoint32</th>
<th>Dynamic index: -</th>
<th>Func. diagram: -</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9991[0...4]</td>
<td>Memory usage drive object actual value / Mem_use DO ActVal</td>
</tr>
<tr>
<td>r9992[0...4]</td>
<td>Memory usage drive object reference value / Mem_use DO ref val</td>
</tr>
<tr>
<td>r9993[0...4]</td>
<td>Memory usage OA application / Mem_use OA</td>
</tr>
<tr>
<td>r9999[0...99]</td>
<td>Software error internal supplementary diagnostics / SW_err int diag</td>
</tr>
</tbody>
</table>

**r9991[0...4]** Memory usage drive object actual value / Mem_use DO ActVal

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- Can be changed: -
- Calculated: -
- Access level: 4
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: -
- P-Group: -
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Displays the memory usage for each drive object as actual value.

**Index:**
- [0] = Fast Memory 1
- [1] = Fast Memory 2
- [2] = Fast Memory 3
- [3] = Fast Memory 4
- [4] = Heap

**r9992[0...4]** Memory usage drive object reference value / Mem_use DO ref val

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- Can be changed: -
- Calculated: -
- Access level: 4
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: -
- P-Group: -
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Displays the memory usage for each drive object as reference value.

**Index:**
- [0] = Fast Memory 1
- [1] = Fast Memory 2
- [2] = Fast Memory 3
- [3] = Fast Memory 4
- [4] = Heap

**r9993[0...4]** Memory usage OA application / Mem_use OA

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- Can be changed: -
- Calculated: -
- Access level: 4
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: -
- P-Group: -
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Displays the memory usage of an OA application.

**Index:**
- [0] = Fast Memory 1
- [1] = Fast Memory 2
- [2] = Fast Memory 3
- [3] = Fast Memory 4
- [4] = Heap

**r9999[0...99]** Software error internal supplementary diagnostics / SW_err int diag

- **CU_G130_DP**, **CU_G130_PN**, **CU_G150_DP**, **CU_G150_PN**
- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: Unsigned32
- Dynamic index: -
- Func. diagram: -
- P-Group: -
- Units group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Diagnostics parameter to display additional information for internal software errors.

**Note:**
- Only for internal Siemens troubleshooting.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p10000</strong></td>
<td>SI sampling time / SI t_sample</td>
<td>Sets the sampling time for the Terminal Module 54F (TM54F). The sampling time in p10000 must be identical to the monitoring clock cycle in p9500/p9300 on the drives.</td>
</tr>
<tr>
<td><strong>p10001</strong></td>
<td>SI delay time for test stop at DO 0 ... DO 3 / SI t_delay DO</td>
<td>Sets the delay time for testing the digital outputs 0 ... 3 (DO 0 ... DO 3). Within this time, for a forced checking procedure of the digital outputs, the signal must have been detected via the corresponding readback input (p10047).</td>
</tr>
<tr>
<td><strong>p10002</strong></td>
<td>SI discrepancy monitoring time / SI discrep t_monit</td>
<td>Sets the monitoring time for the discrepancy for the digital inputs. The signal states at the two associated digital inputs (F-DI) must assume the same state within this monitoring time.</td>
</tr>
<tr>
<td><strong>p10003</strong></td>
<td>SI forced checking procedure timer / SI FCP Timer</td>
<td>Sets the time to carry out the forced checking procedure (test stop). Within the parameterized time, the digital inputs/outputs must have been subject to a forced checking procedure at least once. The forced checking procedure is started with Bi: p10007 = 0/1 signal.</td>
</tr>
</tbody>
</table>

**p10000**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 1.00 [ms]
- **Max:** 25.00 [ms]
- **Factory setting:** 12.00 [ms]

**p10001**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 2.00 [ms]
- **Max:** 2000.00 [ms]
- **Factory setting:** 500.00 [ms]

**p10002**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 1.00 [ms]
- **Max:** 2000.00 [ms]

**p10003**

- **Can be changed:** C2(95)
- **Data type:** FloatingPoint32
- **P-Group:** Safety Integrated
- **Not for motor type:** -
- **Min:** 0.00 [h]
- **Max:** 8760.00 [h]
- **Factory setting:** 8.00 [h]
## List of parameters

### r10004[0...1]

**SI actual checksum TM54F parameters / SI act CRC TM54F**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Displays the actual checksum of the checksum-checked parameters for the Terminal Module 54F (TM54F).</td>
<td>0, 1</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p10005[0...1]

**SI reference checksum TM54F parameters / SI ref CRC TM54F**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Displays the reference checksum of the checksum-checked parameters for the Terminal Module 54F (TM54F).</td>
<td>0, 1</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p10006

**SI acknowledgement internal event input terminal / SI ackn int event**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Select a fail-safe digital input for the signal &quot;acknowledge internal event&quot; (internal fault). The signal is transferred to the corresponding control signal of all drives. The falling edge at this input resets the status &quot;internal event&quot; in the drives. The rising edge at this input acknowledges any existing discrepancy errors.</td>
<td></td>
<td>3</td>
<td>Integer16</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Slightly active</td>
</tr>
<tr>
<td>1</td>
<td>F-DI 0 (X521.2/3/6)</td>
</tr>
<tr>
<td>2</td>
<td>F-DI 1 (X521.4/5/7)</td>
</tr>
<tr>
<td>3</td>
<td>F-DI 2 (X522.1/2/7)</td>
</tr>
<tr>
<td>4</td>
<td>F-DI 3 (X522.3/4/8)</td>
</tr>
<tr>
<td>5</td>
<td>F-DI 4 (X522.5/6/9)</td>
</tr>
<tr>
<td>6</td>
<td>F-DI 5 (X531.2/3/6)</td>
</tr>
<tr>
<td>7</td>
<td>F-DI 6 (X531.4/5/7)</td>
</tr>
<tr>
<td>8</td>
<td>F-DI 7 (X532.1/2/7)</td>
</tr>
<tr>
<td>9</td>
<td>F-DI 8 (X532.3/4/8)</td>
</tr>
<tr>
<td>10</td>
<td>F-DI 9 (X532.5/6/9)</td>
</tr>
<tr>
<td>255</td>
<td>Slightly inactive</td>
</tr>
</tbody>
</table>

### Dependency

Refer to: A35081

### Note

The values "static active" and "static inactive" result in an inactive function of the safe acknowledgment. F-DI: Failsafe Digital Input
**p10007**

**BI: SI forced checking procedure F-DI/F-DO signal source / FCP F-DI/DO s_src**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM54F_MA</strong></td>
<td>Sets the signal source to initiate the test stop. For example, a digital input of the Control Unit or one of the other Terminal Modules can be set as signal source. The test stop is triggered on a 0/1 signal edge. The TM54F must be in the &quot;ready&quot; state (p0010 = 0).</td>
<td></td>
<td>Digital inputs of the TM54F must not be used to trigger the test stop.</td>
</tr>
</tbody>
</table>

**Dependency:**

- Refer to: p10001, p10003, p10041, p10046

**Notice:**

- Parameter being prepared. For this firmware version, the function interface is not supported.

**Description:**

Sets the signal source to initiate the test stop.

**Dependency:**

- Refer to: p10001, p10003, p10041, p10046

**Notice:**

- Digital inputs of the TM54F must not be used to trigger the test stop.

**p10008**

**SI operating mode TM54F / SI op_mode TM54F**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM54F_MA</strong></td>
<td>Sets the operating mode for the Terminal Module 54F (TM54F).</td>
<td>0: Function interface</td>
<td>1: Control interface</td>
</tr>
</tbody>
</table>

**Description:**

Sets the operating mode for the Terminal Module 54F (TM54F).

**Value:**

- 0: Function interface
- 1: Control interface

**Note:**

- Parameter being prepared. For this firmware version, the function interface is not supported.

**p10009**

**SI SLP retract F-DI / SI SLP retr F-DI**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM54F_MA</strong></td>
<td>Selects a fail-safe digital input for the &quot;Retract SLP&quot; function. A rising edge at this FDI makes it possible to retract the axes, which at this instant in time indicate a violation of the SLP limit. After safe acknowledgment of the active safety faults, the axes can be traversed in the direction of the permitted position range. In the retract mode, SLP becomes inactive, and SDI, if enabled, is selected in the direction of the permitted position range. A 0 signal at the F-DI for retraction deactivates the active retract mode. (SLP becomes active again and SDI corresponds to the actual F-DIs that have been selected.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Value:**

- 0: Function inactive
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
Note:
- Retraction is only possible, if SDI in the opposite direction of the permitted position range is not already selected.
- A discrepancy at this F-DI must be acknowledged using a safe acknowledgment.
F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)
SLP: Safely-Limited Position

### p10010[0...5] Si drive object assignment / SI drv_obj assign

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2847, 2848</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62</td>
<td></td>
</tr>
</tbody>
</table>

#### Index:
- [0] = Drive 1
- [1] = Drive 2
- [2] = Drive 3
- [3] = Drive 4
- [4] = Drive 5
- [5] = Drive 6

#### Notice:
If, for a drive, Terminal Module 54F (TM54F) is activated (p9601.2 = 1), its drive object number must be set in an index.

#### Note:
A change only becomes effective after a POWER ON.

### p10011[0...5] Si drive group assignment / SI drv_gr assign

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2848</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>1</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Index:
- [0] = Drive 1
- [1] = Drive 2
- [2] = Drive 3
- [3] = Drive 4
- [4] = Drive 5
- [5] = Drive 6

### p10012[0...5] SI Motor Module Node Identifier Word 1 / SI MM Node ID 1

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0000 hex</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
</tr>
</tbody>
</table>

#### Index:
- [0] = Drive 1
- [1] = Drive 2
- [2] = Drive 3
- [3] = Drive 4
- [4] = Drive 5
- [5] = Drive 6

#### Dependency:
Refer to: p10013, p10014
Note: The Node Identifier (96 bit) is represented in the following 3 parameters.

p10012[0] word 1 (bit 0 ... 31) for Motor Module 1

... p10012[5] word 1 (bit 0 ... 31) for Motor Module 6

p10013[0] word 2 (bit 32 ... 63) for Motor Module 1

... p10013[5] word 2 (bit 32 ... 63) for Motor Module 6

p10014[0] word 3 (bit 64 ... 95) for Motor Module 1

... p10014[5] word 3 (bit 64 ... 95) for Motor Module 6

### p10013[0...5] SI Motor Module Node Identifier Word 2 / SI MM Node ID 2

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the actual Node Identifier (word 2, bit 32 ... 63) for the Motor Modules.

**Index:**

[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

**Dependency:** Refer to: p10012, p10014

**Note:**

The complete Node Identifier (96 bit) is represented in p10012, p10013 and p10014.

### p10014[0...5] SI Motor Module Node Identifier Word 3 / SI MM Node ID 3

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the actual Node Identifier (word 3, bit 64 ... 95) for the Motor Modules.

**Index:**

[0] = Drive 1
[1] = Drive 2
[2] = Drive 3
[3] = Drive 4
[4] = Drive 5
[5] = Drive 6

**Dependency:** Refer to: p10012, p10013

**Note:**

The complete Node Identifier (96 bit) is represented in p10012, p10013 and p10014.

### p10017 SI digital inputs debounce time / SI DI t_debounce

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dynamic index: -</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>1.00 [ms]</td>
<td>100.00 [ms]</td>
<td>1.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the debounce time for digital inputs.

The debounce time is accepted rounded off to whole milliseconds.
The debounce time acts on the following digital inputs:
- Fail-safe digital inputs (F-DI).
- Single-channel digital inputs (DI).

**Note:**
Debounce time = 1 ms: Fault pulses of 1 ms are filtered; only pulses longer than 2 ms are processed.
Debounce time = 3 ms: Fault pulses of 3 ms are filtered; only pulses longer than 4 ms are processed.
The debounce result can be read in r10051.

### p10020[0...3] SI special operating mode selection / SI spec op sel

<table>
<thead>
<tr>
<th>TM54F_MA</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_SL</td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the special operating mode for the operating mode "function interface".
0 = Inactive
1 = Safe Operating Stop with braking (SS2)
2 = Safe Operating Stop without braking (SOS)
3 = Safely reduced speed without standstill (SLS)
4 = Safely reduced speed with agreement (SS2 --> SLS)

**Index:**
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

**Dependency:**
Refer to: p10008

**Note:**
Parameter being prepared. For this firmware version, the function interface is not supported.

### p10021[0...3] SI Emergency Stop stop response / SI Emergency Stop

<table>
<thead>
<tr>
<th>TM54F_MA</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_SL</td>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the stop response for the drive group for Emergency Stop.
The input terminal for Emergency Stop is set in p10038.
0 = Stop reaction STO
1 = Stop reaction SS1
2 = Stop reaction SS2

**Index:**
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

**Dependency:**
Refer to: p10008, p10038

**Note:**
Parameter being prepared. For this firmware version, the function interface is not supported.
### p10022[0...3] SI STO input terminal / SI STO DI

**Description:**
Sets the input terminal for the "STO" function (operating mode "control interface").

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
- 255: Statically inact

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4

**Note:**
- If value = 0: No terminal assigned, safety function always active.
- If value = 255: No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input

**STO:** Safe Torque Off

### p10023[0...3] SI SS1 input terminal / SI SS1 DI

**Description:**
Sets the input terminal for SS1 (operating mode "control interface").

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
- 255: Statically inact

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4
### Parameters

#### List of parameters

**Note:**
- If value = 0:
  - No terminal assigned, safety function always active.
- If value = 255:
  - No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input

**SS1:** Safe Stop 1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10024[0...3]</td>
<td>Sets the input terminal for SS2 (operating mode &quot;control interface&quot;).</td>
<td>0: Statically active</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: F-DI 0 (X521.2/3/6)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: F-DI 1 (X521.1/4/5)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: F-DI 2 (X522.1/2/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: F-DI 3 (X522.3/4/8)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: F-DI 4 (X522.5/6/9)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6: F-DI 5 (X531.2/3/6)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7: F-DI 6 (X531.4/5/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8: F-DI 7 (X532.1/2/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9: F-DI 8 (X532.3/4/8)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10: F-DI 9 (X532.5/6/9)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>255: Statically inact</td>
<td>0</td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4

**Note:**
- If value = 0:
  - No terminal assigned, safety function always active.
- If value = 255:
  - No terminal assigned, safety function always inactive.

**F-DI:** Failsafe Digital Input

**SS2:** Safe Stop 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10025[0...3]</td>
<td>Sets the fail-safe digital input (F-DI) for the &quot;SOS&quot; function (operating mode = control interface).</td>
<td>0: Statically active</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: F-DI 0 (X521.2/3/6)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: F-DI 1 (X521.1/4/5)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: F-DI 2 (X522.1/2/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4: F-DI 3 (X522.3/4/8)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>5: F-DI 4 (X522.5/6/9)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6: F-DI 5 (X531.2/3/6)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7: F-DI 6 (X531.4/5/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8: F-DI 7 (X532.1/2/7)</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9: F-DI 8 (X532.3/4/8)</td>
<td>0</td>
</tr>
</tbody>
</table>
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>F-DI 9 (X532.5/6/9)</strong></td>
<td>Statically active</td>
<td>10:</td>
</tr>
<tr>
<td><strong>Statically inact</strong></td>
<td></td>
<td>255:</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Drive group 1</td>
<td>[0] = Drive group 1</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>If value = 0:</td>
<td>No terminal assigned, safety function always active.</td>
</tr>
<tr>
<td></td>
<td>If value = 255:</td>
<td>No terminal assigned, safety function always inactive.</td>
</tr>
</tbody>
</table>

**F-DI**: Failsafe Digital Input  
**SOS**: Safe Operating Stop

---

### p10026[0...3]  
**SI SLS input terminal / SI SLS DI**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(95)</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Safety Integrated</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Units group: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>255</td>
<td>-</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Drive group 1</td>
<td>[0] = Drive group 1</td>
</tr>
</tbody>
</table>

**Description:** Sets the input terminal for SLS (operating mode "control interface").

---

### p10027[0...3]  
**SI SLS limit bit 0 input terminal / SI SLS lim 0 DI**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(95)</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Safety Integrated</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Units group: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>255</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td>[0] = Drive group 1</td>
<td>[0] = Drive group 1</td>
</tr>
</tbody>
</table>

**Description:** Sets the input terminal for SLS limit bit 0 (operating mode "control interface").

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Parameters

List of parameters

4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note:
If value = 0:
No terminal assigned, selection bit remains statically at "0".
If value = 255:
No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed

p10028[0...3] SI SLS limit bit 1 input terminal / SI SLS lim 1 DI

Can be changed: C2(95) Calculated: - Access level: 3
Data type: Integer16 Dynamic index: - Func. diagram: -
P-Group: Safety Integrated Units group: - Unit selection: -
Not for motor type: -
Min Max Factory setting
0 255 0

Description:
Sets the input terminal for SLS limit bit 1 (operating mode "control interface").

Value:
0: Statically active
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note:
If value = 0:
No terminal assigned, selection bit remains statically at "0".
If value = 255:
No terminal assigned, selection bit remains statically at "1".

F-DI: Failsafe Digital Input
SLS: Safely-Limited Speed
### List of parameters

#### p10030[0...3] SI SDI positive input terminal / SI SDI pos DI

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the input terminal for SDI positive (operating mode "control interface").

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
- 255: Statically inactive

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4

**Note:**
- If value = 0: No terminal assigned, safety function always active.
- If value = 255: No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

#### p10031[0...3] SI SDI negative input terminal / SI SDI neg DI

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the input terminal for SDI negative (operating mode "control interface").

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
- 255: Statically inactive

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4
## Parameters

### List of parameters

Note:

- If value = 0:
  - No terminal assigned, safety function always active.
- If value = 255:
  - No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input
SDI: Safe Direction (safe motion direction)

### p10032[0...3] SI SLP input terminal / SI SLP F-DI

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the input terminal for the "SLP" function

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
- 10: F-DI 9 (X532.5/6/9)
- 255: Statically inact

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4

**Note:**
- If value = 0:
  - No terminal assigned, safety function always active.
- If value = 255:
  - No terminal assigned, safety function always inactive.

F-DI: Failsafe Digital Input
SLP: Safely-Limited Position

### p10033[0...3] SI SLP select input terminal / SI SLP sel F-DI

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
- Sets the input terminal for selecting the position area for "SLP".

**Value:**
- 0: Statically active
- 1: F-DI 0 (X521.2/3/6)
- 2: F-DI 1 (X521.4/5/7)
- 3: F-DI 2 (X522.1/2/7)
- 4: F-DI 3 (X522.3/4/8)
- 5: F-DI 4 (X522.5/6/9)
- 6: F-DI 5 (X531.2/3/6)
- 7: F-DI 6 (X531.4/5/7)
- 8: F-DI 7 (X532.1/2/7)
- 9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X53.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note:
If value = 0:
No terminal assigned, selection bit remains statically at "0".
If value = 255:
No terminal assigned, selection bit remains statically at "1".
F-DI: Failsafe Digital Input
SLP: Safely-Limited Position

SI special operating mode input terminal / SI spec op DI

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the input terminal for "special operating mode" (operating mode "function interface").

Value:
0: Statically active
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
6: F-DI 5 (X531.2/3/6)
7: F-DI 6 (X531.4/5/7)
8: F-DI 7 (X532.1/2/7)
9: F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note:
Parameter being prepared. For this firmware version, the function interface is not supported.
If value = 0:
No terminal assigned, static special operation.
If value = 255:
No terminal assigned, static normal operation.

SI agreement input terminal / SI agreement DI

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>255</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the input terminal for "agreement" (operating mode "function interface").

Value:
0: Statically active
1: F-DI 0 (X521.2/3/6)
2: F-DI 1 (X521.4/5/7)
3: F-DI 2 (X522.1/2/7)
4: F-DI 3 (X522.3/4/8)
5: F-DI 4 (X522.5/6/9)
Parameters

List of parameters

6:  F-DI 5 (X531.2/3/6)
7:  F-DI 6 (X531.4/5/7)
8:  F-DI 7 (X532.1/2/7)
9:  F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Note:
Parameter being prepared. For this firmware version, the function interface is not supported.
If value = 0:
No terminal assigned, no static agreement.
If value = 255:
No terminal assigned, static agreement.

p10038[0...3]  SI Emergency Stop input terminal / SI Emer Stop DI

$\begin{array}{lll}
\text{TM54F_M} & \text{Can be changed: C2(95)} & \text{Access level: 4} \\
\text{TM54F_SL} & \text{Data type: Integer16} & \text{Dynamic index: -} \\
& \text{P-Group: Safety Integrated} & \text{Func. diagram: -} \\
& \text{Not for motor type: -} & \text{Units group: -} \\
& \text{Min} & \text{Max} \\
0 & 255 & 0 \\
\end{array}$

Description:
Sets the input terminal for input "Emergency Stop" (operating mode "function interface").
The behavior of this input signal is set in p10021.

Value:
0:  Statically active
1:  F-DI 0 (X521.2/3/6)
2:  F-DI 1 (X521.4/5/7)
3:  F-DI 2 (X522.1/2/7)
4:  F-DI 3 (X522.3/4/8)
5:  F-DI 4 (X522.5/6/9)
6:  F-DI 5 (X531.2/3/6)
7:  F-DI 6 (X531.4/5/7)
8:  F-DI 7 (X531.2/3/6)
9:  F-DI 8 (X532.3/4/8)
10: F-DI 9 (X532.5/6/9)
255: Statically inact

Index:
[0] = Drive group 1
[1] = Drive group 2
[2] = Drive group 3
[3] = Drive group 4

Dependency:
Refer to: p10008, p10021

Note:
Parameter being prepared. For this firmware version, the function interface is not supported.
If value = 0:
No terminal assigned, "Emergency Stop" statically active.
If value = 255:
No terminal assigned, no "Emergency Stop" statically active.
### p10039[0...3] SI Safe State signal selection / SI Safe State Sel

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Power_removed</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>SS1_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>SS2_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>SOS_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>SDL_pos_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>SDL_neg_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>SLP_active</td>
<td>Selected</td>
<td>Not selected</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Index:**
- [0] = Drive group 1
- [1] = Drive group 2
- [2] = Drive group 3
- [3] = Drive group 4

**Description:**
Sets the input mode for the safety digital inputs (F-DI).

**Note:**
Only an NC contact can be connected for the safety digital inputs not listed.

### p10040 SI F-DI input mode / SI F-DI inp_mode

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>F-DI 0, DI 1+ (X521.3)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2850</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>F-DI 1, DI 3+ (X521.5)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2850</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>F-DI 2, DI 5+ (X522.2)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2850</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>F-DI 3, DI 7+ (X522.4)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2850</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>F-DI 4, DI 9+ (X522.6)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2850</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>F-DI 5, DI 11+ (X531.3)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2851</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>F-DI 6, DI 13+ (X531.5)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2851</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>F-DI 7, DI 15+ (X532.2)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2851</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>F-DI 8, DI 17+ (X532.4)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2851</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>F-DI 9, DI 19+ (X532.6)</td>
<td>NO contact</td>
<td>NC contact</td>
<td>2851</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the input mode for the safety digital inputs (F-DI).

### p10041 SI F-DI enable for test / SI F-DI enab test

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>F-DI 0, power supply L1+</td>
<td>Test active</td>
<td>No test</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>F-DI 1, power supply L1+</td>
<td>Test active</td>
<td>No test</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>F-DI 2, power supply L1+</td>
<td>Test active</td>
<td>No test</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>F-DI 3, power supply L1+</td>
<td>Test active</td>
<td>No test</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### p10042[0...5]

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No function</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>Drive group 1 STO active</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Drive group 1 SS1 active</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Drive group 1 SS2 active</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Drive group 1 SOS active</td>
<td>-</td>
</tr>
<tr>
<td>5</td>
<td>Drive group 1 SLS active</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Drive group 1 SSM feedback signal active</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Drive group 1 safe state</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>Drive group 1 SOS selected</td>
<td>-</td>
</tr>
<tr>
<td>9</td>
<td>Drive group 1 internal event</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Drive group 1 active SLS stage bit 0</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Drive group 1 active SLS stage bit 1</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Drive group 1 SDI positive active</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Drive group 1 SDI negative active</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Drive group 1 SLP active</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Drive group 1 active SLP area</td>
<td>-</td>
</tr>
<tr>
<td>257</td>
<td>Drive group 2 STO active</td>
<td>-</td>
</tr>
<tr>
<td>258</td>
<td>Drive group 2 SS1 active</td>
<td>-</td>
</tr>
<tr>
<td>259</td>
<td>Drive group 2 SS2 active</td>
<td>-</td>
</tr>
<tr>
<td>260</td>
<td>Drive group 2 SOS active</td>
<td>-</td>
</tr>
<tr>
<td>261</td>
<td>Drive group 2 SLS active</td>
<td>-</td>
</tr>
<tr>
<td>262</td>
<td>Drive group 2 SSM feedback signal active</td>
<td>-</td>
</tr>
<tr>
<td>263</td>
<td>Drive group 2 safe state</td>
<td>-</td>
</tr>
<tr>
<td>264</td>
<td>Drive group 2 SOS selected</td>
<td>-</td>
</tr>
<tr>
<td>265</td>
<td>Drive group 2 internal event</td>
<td>-</td>
</tr>
<tr>
<td>266</td>
<td>Drive group 2 active SLS stage bit 0</td>
<td>-</td>
</tr>
<tr>
<td>267</td>
<td>Drive group 2 active SLS stage bit 1</td>
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<tr>
<td>268</td>
<td>Drive group 2 SDI positive active</td>
<td>-</td>
</tr>
<tr>
<td>269</td>
<td>Drive group 2 SDI negative active</td>
<td>-</td>
</tr>
<tr>
<td>270</td>
<td>Drive group 2 SLP active</td>
<td>-</td>
</tr>
<tr>
<td>271</td>
<td>Drive group 2 active SLP area</td>
<td>-</td>
</tr>
<tr>
<td>513</td>
<td>Drive group 3 STO active</td>
<td>-</td>
</tr>
<tr>
<td>514</td>
<td>Drive group 3 SS1 active</td>
<td>-</td>
</tr>
<tr>
<td>515</td>
<td>Drive group 3 SS2 active</td>
<td>-</td>
</tr>
<tr>
<td>516</td>
<td>Drive group 3 SOS active</td>
<td>-</td>
</tr>
<tr>
<td>517</td>
<td>Drive group 3 SLS active</td>
<td>-</td>
</tr>
<tr>
<td>518</td>
<td>Drive group 3 SSM feedback signal active</td>
<td>-</td>
</tr>
<tr>
<td>519</td>
<td>Drive group 3 safe state</td>
<td>-</td>
</tr>
<tr>
<td>520</td>
<td>Drive group 3 SOS selected</td>
<td>-</td>
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<tr>
<td>521</td>
<td>Drive group 3 internal event</td>
<td>-</td>
</tr>
<tr>
<td>522</td>
<td>Drive group 3 active SLS stage bit 0</td>
<td>-</td>
</tr>
<tr>
<td>523</td>
<td>Drive group 3 active SLS stage bit 1</td>
<td>-</td>
</tr>
<tr>
<td>524</td>
<td>Drive group 3 SDI positive active</td>
<td>-</td>
</tr>
<tr>
<td>525</td>
<td>Drive group 3 SDI negative active</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

- **F-DI:** Failsafe Digital Input
- **p10042[0...5]**: SI F-DO 0 signal sources / SI F-DO 0 S_src

**TM54F_MA**
- **Can be changed:** C2(95)
- **Data type:** Integer16
- **P-Group:** Safety Integrated
- **Not for motor type:** -

**TM54F_SL**
- **Calculated:** -
- **Dynamic index:** -
- **Units group:** -
- **Expert list:** 1

**Description:**

Sets the signal sources for F-DO 0. The 6 signal sources in p10042[0...5] are AND'ed and the result is output at F-DO 0.
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index:
[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note:
F-DO: Failsafe Digital Output

p10043[0...5] SI F-DO 1 signal sources / SI F-DO 1 S_src

<table>
<thead>
<tr>
<th>TM54F_MA, TM54F_SL</th>
<th>Can be changed: C2(95)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2857</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>783</td>
</tr>
</tbody>
</table>

Factory setting

Description:
Sets the signal sources for F-DO 1.
The 6 signal sources in p10043[0...5] are AND'ed and the result is output at F-DO 1.

Value:
0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area
257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
Parameters

List of parameters

268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area
513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
528: Drive group 3 SDI positive active
529: Drive group 3 SDI negative active
530: Drive group 3 SLP active
531: Drive group 3 active SLP area
572: Drive group 4 SSM feedback signal active
573: Drive group 4 SLS active
574: Drive group 4 safe state
575: Drive group 4 SOS selected
576: Drive group 4 internal event
577: Drive group 4 active SLS stage bit 0
578: Drive group 4 active SLS stage bit 1
579: Drive group 4 SOS active
580: Drive group 4 SLS active
581: Drive group 4 SSM feedback signal active
582: Drive group 4 SDI positive active
583: Drive group 4 SDI negative active
584: Drive group 4 SLP active
585: Drive group 4 active SLP area

Index:

[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note:

F-DO: Failsafe Digital Output

p10044[0...5] SI F-DO 2 signal sources / SI F-DO 2 S_src

<table>
<thead>
<tr>
<th>TM54F_MAO</th>
<th>TM54F_SLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0</td>
<td>783</td>
</tr>
</tbody>
</table>

Description:

Sets the signal sources for F-DO 2.
The 6 signal sources in p10044[0...5] are AND'ed and the result is output at F-DO 2.

Value:

0: No function
1: Drive group 1 STO active
2: Drive group 1 SS1 active
3: Drive group 1 SS2 active
4: Drive group 1 SOS active
5: Drive group 1 SLS active
6: Drive group 1 SSM feedback signal active
7: Drive group 1 safe state
8: Drive group 1 SOS selected
9: Drive group 1 internal event
Parameters

List of parameters

10: Drive group 1 active SLS stage bit 0
11: Drive group 1 active SLS stage bit 1
12: Drive group 1 SDI positive active
13: Drive group 1 SDI negative active
14: Drive group 1 SLP active
15: Drive group 1 active SLP area
257: Drive group 2 STO active
258: Drive group 2 SS1 active
259: Drive group 2 SS2 active
260: Drive group 2 SOS active
261: Drive group 2 SLS active
262: Drive group 2 SSM feedback signal active
263: Drive group 2 safe state
264: Drive group 2 SOS selected
265: Drive group 2 internal event
266: Drive group 2 active SLS stage bit 0
267: Drive group 2 active SLS stage bit 1
268: Drive group 2 SDI positive active
269: Drive group 2 SDI negative active
270: Drive group 2 SLP active
271: Drive group 2 active SLP area
513: Drive group 3 STO active
514: Drive group 3 SS1 active
515: Drive group 3 SS2 active
516: Drive group 3 SOS active
517: Drive group 3 SLS active
518: Drive group 3 SSM feedback signal active
519: Drive group 3 safe state
520: Drive group 3 SOS selected
521: Drive group 3 internal event
522: Drive group 3 active SLS stage bit 0
523: Drive group 3 active SLS stage bit 1
524: Drive group 3 SDI positive active
525: Drive group 3 SDI negative active
526: Drive group 3 SLP active
527: Drive group 3 active SLP area
769: Drive group 4 STO active
770: Drive group 4 SS1 active
771: Drive group 4 SS2 active
772: Drive group 4 SOS active
773: Drive group 4 SLS active
774: Drive group 4 SSM feedback signal active
775: Drive group 4 safe state
776: Drive group 4 SOS selected
777: Drive group 4 internal event
778: Drive group 4 active SLS stage bit 0
779: Drive group 4 active SLS stage bit 1
780: Drive group 4 SDI positive active
781: Drive group 4 SDI negative active
782: Drive group 4 SLP active
783: Drive group 4 active SLP area

Index:

[0] = AND logic operation input 1
[1] = AND logic operation input 2
[2] = AND logic operation input 3
[3] = AND logic operation input 4
[4] = AND logic operation input 5
[5] = AND logic operation input 6

Note:

F-DO: Failsafe Digital Output
### SI F-DO 3 signal sources / SI F-DO 3 S_src

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10045[0...5]</td>
<td>Sets the signal sources for F-DO 3.</td>
<td>The 6 signal sources in p10045[0...5] are AND'ed and the result is output at F-DO 3.</td>
</tr>
</tbody>
</table>

#### Value:
- **0**: No function
- **1**: Drive group 1 STO active
- **2**: Drive group 1 SS1 active
- **3**: Drive group 1 SS2 active
- **4**: Drive group 1 SOS active
- **5**: Drive group 1 SLS active
- **6**: Drive group 1 SSM feedback signal active
- **7**: Drive group 1 safe state
- **8**: Drive group 1 SOS selected
- **9**: Drive group 1 internal event
- **10**: Drive group 1 active SLS stage bit 0
- **11**: Drive group 1 active SLS stage bit 1
- **12**: Drive group 1 SDI positive active
- **13**: Drive group 1 SDI negative active
- **14**: Drive group 1 SLP active
- **15**: Drive group 1 active SLP area
- **257**: Drive group 2 STO active
- **258**: Drive group 2 SS1 active
- **259**: Drive group 2 SS2 active
- **260**: Drive group 2 SOS active
- **261**: Drive group 2 SLS active
- **262**: Drive group 2 SSM feedback signal active
- **263**: Drive group 2 safe state
- **264**: Drive group 2 SOS selected
- **265**: Drive group 2 internal event
- **266**: Drive group 2 active SLS stage bit 0
- **267**: Drive group 2 active SLS stage bit 1
- **268**: Drive group 2 SDI positive active
- **269**: Drive group 2 SDI negative active
- **270**: Drive group 2 SLP active
- **271**: Drive group 2 SLP area
- **513**: Drive group 3 STO active
- **514**: Drive group 3 SS1 active
- **515**: Drive group 3 SS2 active
- **516**: Drive group 3 SOS active
- **517**: Drive group 3 SLS active
- **518**: Drive group 3 SSM feedback signal active
- **519**: Drive group 3 safe state
- **520**: Drive group 3 SOS selected
- **521**: Drive group 3 internal event
- **522**: Drive group 3 active SLS stage bit 0
- **523**: Drive group 3 active SLS stage bit 1
- **524**: Drive group 3 SDI positive active
- **525**: Drive group 3 SDI negative active
- **526**: Drive group 3 SLP active
- **527**: Drive group 3 active SLP area
- **769**: Drive group 4 STO active
- **770**: Drive group 4 SS1 active
- **771**: Drive group 4 SS2 active
- **772**: Drive group 4 SOS active
- **773**: Drive group 4 SLS active

#### Parameters

- **List of parameters**

#### Description:

Can be changed: C2(95)  
Calculated: -  
Access level: 3

Data type: Integer16  
Dynamic index: -  
Func. diagram: 2857

P-Group: Safety Integrated  
Units group: -  
Unit selection: -

Not for motor type: -  
Scaling: -  
Expert list: 1

Min: 0  
Max: 783  
Factory setting: 0

---

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### List of parameters

774: Drive group 4 SSM feedback signal active  
775: Drive group 4 safe state  
776: Drive group 4 SOS selected  
777: Drive group 4 internal event  
778: Drive group 4 active SLS stage bit 0  
779: Drive group 4 active SLS stage bit 1  
780: Drive group 4 SDI positive active  
781: Drive group 4 SDI negative active  
782: Drive group 4 SLP active  
783: Drive group 4 active SLP area  

Index:  
[0] = AND logic operation input 1  
[1] = AND logic operation input 2  
[2] = AND logic operation input 3  
[3] = AND logic operation input 4  
[4] = AND logic operation input 5  
[5] = AND logic operation input 6  

Note:  
F-DO: Failsafe Digital Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10046</td>
<td>SI F-DO feedback signal input activation / SI F-DO FS act</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dynamic index: -</td>
<td>Func. diagram: 2848</td>
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</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0000 bin</td>
<td></td>
</tr>
</tbody>
</table>

Dependency:  
Refer to: p10047  
Note:  
F-DO: Failsafe Digital Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p10047[0...3]</td>
<td>SI F-DO test stop mode / SI F-DO test mode</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM54F_MA, TM54F_SL</td>
<td>Can be changed: C2(95)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dynamic index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Safety Integrated</td>
<td>Units group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0001 bin</td>
<td>0011 bin</td>
<td>0010 bin</td>
<td></td>
</tr>
</tbody>
</table>

Dependency:  
Refer to: p10047  
Note:  
F-DO: Failsafe Digital Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Test mode 1 evaluation of int. diagnostic signal (passive load)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Test mode 2 read back F-DO in DI (relay circuit)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Test mode 3 read back F-DO in DI (actuator with feedback signal)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

When this test mode is being used, and excessive resistance of the load between DO+ and DO- can lead to problems during the test stop. It is therefore important to make sure that the load resistance at an individual F-DO does not exceed 10 kOhm.
**r10051.0...9**

**CO/BO: SI digital inputs status / SI DI status**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>F-DI 0</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2850</td>
</tr>
<tr>
<td>01</td>
<td>F-DI 1</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2850</td>
</tr>
<tr>
<td>02</td>
<td>F-DI 2</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2850</td>
</tr>
<tr>
<td>03</td>
<td>F-DI 3</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2850</td>
</tr>
<tr>
<td>04</td>
<td>F-DI 4</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2850</td>
</tr>
<tr>
<td>05</td>
<td>F-DI 5</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2851</td>
</tr>
<tr>
<td>06</td>
<td>F-DI 6</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2851</td>
</tr>
<tr>
<td>07</td>
<td>F-DI 7</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2851</td>
</tr>
<tr>
<td>08</td>
<td>F-DI 8</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2851</td>
</tr>
<tr>
<td>09</td>
<td>F-DI 9</td>
<td>Logical 1</td>
<td>Logical 0</td>
<td>2851</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p10017, p10040

**Note:**
If a safety function is assigned to an input (e.g. via p10022), then the following applies:
- logical "0": Safety function is selected
- logical "1": Safety function is de-selected
The interrelationship between the logical level and the external voltage level at the input depends on the parameterization (refer to p10040) of the input as either NC or NO contact and is aligned to the use of a safety function:
With 24 V at the input, NC contacts have a logical "1" level, for 0 V at the input, a logical "0" level.
This means that an NC/NC contact parameterization of 0 V at both inputs of the F-DI selects the safety function, for 24 V at both inputs, de-selects the safety function.
With 24 V at the input, NO contacts have a logical "0" level, for 0 V at the input, a logical "1" level.
This means that for an NC/NO contact parameterization, the level 0 V/24 V selects the safety function, the level 24 V/0 V de-selects the safety function.
F-DI: Failsafe Digital Input

---

**r10052.0...3**

**CO/BO: SI digital outputs status / SI DO status**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DO 0</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>01</td>
<td>DO 1</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>02</td>
<td>DO 2</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>03</td>
<td>DO 3</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
</tbody>
</table>

**Dependency:**
Displays the status of the digital outputs at the Terminal Module 54F (TM54F).

**Note:**
F-DO: Failsafe Digital Output
List of parameters

r10053.0...3 CO/BO: SI digital inputs 20 ... 23 status / SI DI 20...23 stat

TM54F_SL

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>DI 20</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>01</td>
<td>DI 21</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>02</td>
<td>DI 22</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
<tr>
<td>03</td>
<td>DI 23</td>
<td>High</td>
<td>Low</td>
<td>2853</td>
</tr>
</tbody>
</table>

Description: Displays the status of the digital inputs at the Terminal Module 54F (TM54F).

Bit field: Bit Signal name 1 signal 0 signal FP
00 DI 20 High Low 2853
01 DI 21 High Low 2853
02 DI 22 High Low 2853
03 DI 23 High Low 2853

r10054 SI TM54F failsafe events active / SI failsafe act

TM54F_MA, TM54F_SL

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Commissioning mode active (p0010 = 95)</td>
<td>Yes</td>
<td>No</td>
<td>2847</td>
</tr>
<tr>
<td>01</td>
<td>Checksum error of the safety parameters</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Internal synchronization problem within TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Internal software error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Overvoltage in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Undervoltage in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Error at test stop</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Error for crosswise data comparison within TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Overtemperature in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Failsafe events active on another channel</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the events that lead to the transfer of failsafe signals to all drives assigned to the TM54F. If the second channel of the TM54F transmits failsafe signals, then these are synchronized to the other channel.

Possibilities of resolving the situation:
- error during test stop: correctly perform the test stop.
- internal software error: no possibility of resolving this problem, POWER ON.
- internal synchronization problem: no possibility of resolving this problem, POWER ON.
- all other causes: remove the cause of the error and carry out a safety-relevant acknowledgement (p10006).

Bit field: Bit Signal name 1 signal 0 signal FP
00 Commissioning mode active (p0010 = 95) Yes No 2847
01 Checksum error of the safety parameters Yes No -
02 Internal synchronization problem within TM54F Yes No -
03 Internal software error Yes No -
04 Overvoltage in the TM54F Yes No -
05 Undervoltage in the TM54F Yes No -
06 Error at test stop Yes No -
07 Error for crosswise data comparison within TM54F Yes No -
08 Overtemperature in the TM54F Yes No -
31 Failsafe events active on another channel Yes No -

r10055 SI TM54F communication status drive-specific / SI comm_stat drv

TM54F_MA, TM54F_SL

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Commissioning mode active (p10010 = 95)</td>
<td>Yes</td>
<td>No</td>
<td>2847</td>
</tr>
<tr>
<td>01</td>
<td>Checksum error of the safety parameters</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Internal synchronization problem within TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Internal software error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Overvoltage in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Undervoltage in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Error at test stop</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Error for crosswise data comparison within TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Overtemperature in the TM54F</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Failsafe events active on another channel</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the communication status of the individual drives with the the Terminal Module 54F (TM54F).

For r10055 = 0, the following applies:
All drives assigned in p10010 communicate with the TM54F.
Parameters

List of parameters

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>00</td>
<td>Communication between drive 1 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Communication between drive 2 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Communication between drive 3 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Communication between drive 4 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>Communication between drive 5 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>Communication between drive 6 and TM54F</td>
<td>Not configured</td>
<td>Configured</td>
<td>-</td>
</tr>
</tbody>
</table>

r10056.0 CO/BO: SI Status / SI stat

TM54F_MA

Can be changed: -
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
Description: Displays the status of the Terminal Module 54F (TM54F).

Bit field: Bit | Signal name | 1 signal | 0 signal | FP |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Test stop status</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
</tr>
</tbody>
</table>

p10061 SI password input TM54F / SI password inp

TM54F_MA, TM54F_SL

Can be changed: T
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
Description: Enters the Safety Integrated password for the Terminal Module 54F (TM54F). This password is required to change the safety-relevant parameters.

p10062 SI password new TM54F / SI password new

TM54F_MA, TM54F_SL

Can be changed: C2(95)
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
Description: Enters the new Safety Integrated password for the Terminal Module 54F (TM54F).
Dependency: A change made to the Safety Integrated password must be acknowledged in the following parameter: Refer to: p10063

p10063 SI password acknowledgement TM54F / SI ackn password

TM54F_MA, TM54F_SL

Can be changed: C2(95)
Data type: Unsigned32
P-Group: Safety Integrated
Not for motor type: -
Min
Max
Description: Acknowledgement of the new Safety Integrated password for the Terminal Module 54F (TM54F).
Dependency: Refer to: p10062

Note: The new password entered into p10062 must be re-entered in order to acknowledge.

p10062 = p10063 = 0 is automatically set after the new Safety Integrated password has been successfully acknowledged.

r10090[0...3] SI TM54F version / SI TM54F version

Description: Displays the Safety Integrated version for the Terminal Module 54F (TM54F).

Index:
- [0] = Safety Version (major release)
- [1] = Safety Version (minor release)
- [2] = Safety Version (baselevel or patch)
- [3] = Safety Version (hotfix)

Dependency: Refer to: r9390, r9590, r9770, r9870, r9890

Note: Example:
r10090[0] = 2, r10090[1] = 60, r10090[2] = 1, r10090[3] = 0 --> SI TM54F version V02.60.01.00

p60022 PROFIsafe telegram selection / Ps telegram_sel

Description: Sets the PROFIsafe telegram number.

Value:
- 0: No PROFIsafe telegram selected
- 30: PROFIsafe standard telegram 30, PZD-1/1
- 31: PROFIsafe standard telegram 31, PZD-2/2
- 901: PROFIsafe SIEMENS telegram 901, PZD-3/5
- 902: PROFIsafe SIEMENS telegram 902, PZD-3/6

Dependency: Refer to: p9611, p9811

r61000[0...239] PROFINET Name of Station / PN Name of Station

Description: Displays PROFINET Name of Station.

Notice: An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
## Parameters

### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r61001[0...3]</td>
<td>PROFINET IP of Station / PN IP of Station</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

- **CU_G130_DP (PROFINET), CU_G130_PN, CU_G150_DP (PROFINET), CU_G150_PN**
- **Data type:** Unsigned8
- **Dynamic index:** -
- **Units group:** -
- **Scaling:** -
- **Expert list:** 1

**Min** | **Max** | **Factory setting**
--- | --- | ---
- | - | -

**Description:** Displays PROFINET IP of Station.
### 1.3 Parameters for data sets

#### 1.3.1 Parameters for command data sets (CDS)

The following list contains the parameters that are dependent on the command data sets.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0641[0...n]</td>
<td>CI: Current limit, variable / Curr lim var</td>
</tr>
<tr>
<td>p0700[0...n]</td>
<td>Macro Binector Input (BI) / Macro BI</td>
</tr>
<tr>
<td>p0820[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0</td>
</tr>
<tr>
<td>p0821[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1</td>
</tr>
<tr>
<td>p0822[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 2 / DDS select., bit 2</td>
</tr>
<tr>
<td>p0823[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 3 / DDS select., bit 3</td>
</tr>
<tr>
<td>p0824[0...n]</td>
<td>BI: Drive Data Set selection DDS bit 4 / DDS select., bit 4</td>
</tr>
<tr>
<td>p0828[0...n]</td>
<td>BI: Motor changeover, feedback signal / Mot_chng fdbk sig</td>
</tr>
<tr>
<td>p0840[0...n]</td>
<td>BI: ON / OFF 1 (OFF1) / ON / OFF (OFF1)</td>
</tr>
<tr>
<td>p0844[0...n]</td>
<td>BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1</td>
</tr>
<tr>
<td>p0845[0...n]</td>
<td>BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2</td>
</tr>
<tr>
<td>p0848[0...n]</td>
<td>BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1</td>
</tr>
<tr>
<td>p0849[0...n]</td>
<td>BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2</td>
</tr>
<tr>
<td>p0852[0...n]</td>
<td>BI: Enable operation/inhibit operation / Operation enable</td>
</tr>
<tr>
<td>p0854[0...n]</td>
<td>BI: Control by PLC/no control by PLC / Master ctrl by PLC</td>
</tr>
<tr>
<td>p0855[0...n]</td>
<td>BI: Unconditionally release holding brake / Uncond open brake</td>
</tr>
<tr>
<td>p0856[0...n]</td>
<td>BI: Speed controller enable / n_ctrl enable</td>
</tr>
<tr>
<td>p0858[0...n]</td>
<td>BI: Unconditionally close holding brake / Uncond close brake</td>
</tr>
<tr>
<td>p1000[0...n]</td>
<td>Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set</td>
</tr>
<tr>
<td>p1020[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 0 / n_set_fixed Bit 0</td>
</tr>
<tr>
<td>p1021[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 1 / n_set_fixed Bit 1</td>
</tr>
<tr>
<td>p1022[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 2 / n_set_fixed Bit 2</td>
</tr>
<tr>
<td>p1023[0...n]</td>
<td>BI: Fixed speed setpoint selection Bit 3 / n_set_fixed Bit 3</td>
</tr>
<tr>
<td>p1035[0...n]</td>
<td>BI: Motorized potentiometer setpoint raise / Mop raise</td>
</tr>
<tr>
<td>p1036[0...n]</td>
<td>BI: Motorized potentiometer lower setpoint / Mop lower</td>
</tr>
<tr>
<td>p1039[0...n]</td>
<td>BI: Motorized potentiometer inversion / MotP inv</td>
</tr>
<tr>
<td>p1041[0...n]</td>
<td>BI: Motorized potentiometer manual/automatic / Mop manual/auto</td>
</tr>
<tr>
<td>p1042[0...n]</td>
<td>CI: Motorized potentiometer automatic setpoint / Mop auto setpoint</td>
</tr>
<tr>
<td>p1043[0...n]</td>
<td>BI: Motorized potentiometer accept setting value / MotP acc set val</td>
</tr>
<tr>
<td>p1044[0...n]</td>
<td>CI: Motorized potentiometer setting value / Mop set val</td>
</tr>
<tr>
<td>p1051[0...n]</td>
<td>CI: Speed limit RFG positive direction of rotation / n_limit RFG pos</td>
</tr>
<tr>
<td>p1052[0...n]</td>
<td>CI: Speed limit RFG negative direction of rotation / n_limit RFG neg</td>
</tr>
<tr>
<td>p1055[0...n]</td>
<td>BI: Jog bit 0 / Jog bit 0</td>
</tr>
<tr>
<td>p1056[0...n]</td>
<td>BI: Jog bit 1 / Jog bit 1</td>
</tr>
<tr>
<td>p1070[0...n]</td>
<td>CI: Main setpoint / Main setpoint</td>
</tr>
<tr>
<td>p1071[0...n]</td>
<td>CI: Main setpoint scaling / Main setp scal</td>
</tr>
<tr>
<td>p1075[0...n]</td>
<td>CI: Supplementary setpoint / Suppl setp</td>
</tr>
<tr>
<td>p1076[0...n]</td>
<td>CI: Supplementary setpoint scaling / Suppl setp scal</td>
</tr>
<tr>
<td>p1085[0...n]</td>
<td>CI: Speed limit in positive direction of rotation / n_limit pos</td>
</tr>
<tr>
<td>p1088[0...n]</td>
<td>CI: Speed limit in negative direction of rotation / n_limit neg</td>
</tr>
<tr>
<td>p1106[0...n]</td>
<td>CI: Minimum speed signal source / n_min s_src</td>
</tr>
<tr>
<td>p1110[0...n]</td>
<td>BI: Inhibit negative direction / Inhib neg dir</td>
</tr>
<tr>
<td>p1111[0...n]</td>
<td>BI: Inhibit positive direction / Inhib pos dir</td>
</tr>
<tr>
<td>p1113[0...n]</td>
<td>BI: Setpoint inversion / Setp inv</td>
</tr>
</tbody>
</table>
**Parameters**

**Parameters for data sets**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1122[0...n]</td>
<td>BI: Bypass ramp-function generator / Bypass RFG</td>
</tr>
<tr>
<td>p1138[0...n]</td>
<td>CI: Up ramp scaling / Up ramp scaling</td>
</tr>
<tr>
<td>p1139[0...n]</td>
<td>CI: Down ramp scaling / Down ramp scaling</td>
</tr>
<tr>
<td>p1140[0...n]</td>
<td>BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable</td>
</tr>
<tr>
<td>p1141[0...n]</td>
<td>BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG</td>
</tr>
<tr>
<td>p1142[0...n]</td>
<td>BI: Enable setpoint/inhibit setpoint / Setpoint enable</td>
</tr>
<tr>
<td>p1143[0...n]</td>
<td>BI: Ramp-function generator, accept setting value / RFG accept set v</td>
</tr>
<tr>
<td>p1144[0...n]</td>
<td>CI: Ramp-function generator setting value / RFG setting value</td>
</tr>
<tr>
<td>p1155[0...n]</td>
<td>CI: Speed controller speed setpoint 1 / n_ctrl n_set 1</td>
</tr>
<tr>
<td>p1160[0...n]</td>
<td>CI: Speed controller speed setpoint 2 / n_ctrl n_set 2</td>
</tr>
<tr>
<td>p1201[0...n]</td>
<td>BI: Flying restart enable signal source / Fly_res enab S_src</td>
</tr>
<tr>
<td>p1230[0...n]</td>
<td>BI: Armature short-circuit / DC braking activation / ASC/DCBRK act</td>
</tr>
<tr>
<td>p1235[0...n]</td>
<td>BI: External armature short-circuit, contactor feedback signal / ASC ext feedback</td>
</tr>
<tr>
<td>p1330[0...n]</td>
<td>CI: U/f control independent voltage setpoint / Uf U_set independ.</td>
</tr>
<tr>
<td>p1356[0...n]</td>
<td>CI: U/f control, angular setpoint / Uf ang setpoint</td>
</tr>
<tr>
<td>p1437[0...n]</td>
<td>CI: Speed controller, reference model I component input / n_ctrRefMod I_comp</td>
</tr>
<tr>
<td>p1440[0...n]</td>
<td>CI: Speed controller speed actual value / n_ctrl n_act</td>
</tr>
<tr>
<td>p1455[0...n]</td>
<td>CI: Speed controller P gain adaptation signal / n_ctrl adapt_sig Kp</td>
</tr>
<tr>
<td>p1460[0...n]</td>
<td>CI: Speed controller P-gain scaling / n_ctrl Kp scal</td>
</tr>
<tr>
<td>p1479[0...n]</td>
<td>CI: Speed controller torque setting value for motor holding brake / n_ctrl M Sv MHB</td>
</tr>
<tr>
<td>p1476[0...n]</td>
<td>BI: Speed controller hold integrator / n_ctrl integ stop</td>
</tr>
<tr>
<td>p1477[0...n]</td>
<td>BI: Speed controller set integrator value / n_ctrl integ set</td>
</tr>
<tr>
<td>p1478[0...n]</td>
<td>CI: Speed controller integrator setting value / n_ctrl I_val setVal</td>
</tr>
<tr>
<td>p1479[0...n]</td>
<td>CI: Speed controller integrator setting value scaling / n_ctrl I_val scal</td>
</tr>
<tr>
<td>p1486[0...n]</td>
<td>CI: Droop compensation torque / Droop M_comp</td>
</tr>
<tr>
<td>p1492[0...n]</td>
<td>BI: Droop feedback enable / Droop enable</td>
</tr>
<tr>
<td>p1495[0...n]</td>
<td>CI: Acceleration pre-control / a_prectrl</td>
</tr>
<tr>
<td>p1497[0...n]</td>
<td>CI: Moment of inertia, scaling / M_mom inert scal</td>
</tr>
<tr>
<td>p1500[0...n]</td>
<td>Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set</td>
</tr>
<tr>
<td>p1501[0...n]</td>
<td>BI: Change over between closed-loop speed/torque control / Changeov n/M_ctrl</td>
</tr>
<tr>
<td>p1503[0...n]</td>
<td>CI: Torque setpoint / M_set</td>
</tr>
<tr>
<td>p1511[0...n]</td>
<td>CI: Supplementary torque 1 / M_suppl 1</td>
</tr>
<tr>
<td>p1512[0...n]</td>
<td>CI: Supplementary torque 1 scaling / M_suppl 1 scal</td>
</tr>
<tr>
<td>p1513[0...n]</td>
<td>CI: Supplementary torque 2 / M_suppl 2</td>
</tr>
<tr>
<td>p1520[0...n]</td>
<td>CI: Torque limit upper / M_max upper</td>
</tr>
<tr>
<td>p1523[0...n]</td>
<td>CI: Torque limit lower / M_max lower</td>
</tr>
<tr>
<td>p1528[0...n]</td>
<td>CI: Torque limit upper scaling / M_max upper scal</td>
</tr>
<tr>
<td>p1529[0...n]</td>
<td>CI: Torque limit lower scaling / M_max lower scal</td>
</tr>
<tr>
<td>p1540[0...n]</td>
<td>CI: Torque limit speed controller upper scaling / M_max n-ctr upScal</td>
</tr>
<tr>
<td>p1541[0...n]</td>
<td>CI: Torque limit. speed controller lower scaling / M_max nctr lowScal</td>
</tr>
<tr>
<td>p1545[0...n]</td>
<td>BI: Activates travel to a fixed stop / TIS activation</td>
</tr>
<tr>
<td>p1551[0...n]</td>
<td>BI: Torque limit variable/fixxed signal source / M_lim var/fixS_src</td>
</tr>
<tr>
<td>p1552[0...n]</td>
<td>CI: Torque limit upper scaling without offset / M_max up w/o offs</td>
</tr>
<tr>
<td>p1554[0...n]</td>
<td>CI: Torque limit lower scaling without offset / M_max low w/o offs</td>
</tr>
<tr>
<td>p1555[0...n]</td>
<td>CI: Power limit / P_max</td>
</tr>
<tr>
<td>p1569[0...n]</td>
<td>CI: Supplementary torque 3 / M_suppl 3</td>
</tr>
<tr>
<td>p1571[0...n]</td>
<td>CI: Supplementary flux setpoint / Suppl flux setp</td>
</tr>
<tr>
<td>p1640[0...n]</td>
<td>CI: Excitation current actual value signal source / I_exc_ActVal S_src</td>
</tr>
<tr>
<td>p2103[0...n]</td>
<td>BI: 1. Acknowledge faults / 1. Acknowledge</td>
</tr>
<tr>
<td>p2104[0...n]</td>
<td>BI: 2. Acknowledge faults / 2. Acknowledge</td>
</tr>
<tr>
<td>p2105[0...n]</td>
<td>BI: 3. Acknowledge faults / 3. Acknowledge</td>
</tr>
<tr>
<td>p2106[0...n]</td>
<td>BI: External fault 1 / External fault 1</td>
</tr>
<tr>
<td>p2107[0...n]</td>
<td>BI: External fault 2 / External fault 2</td>
</tr>
</tbody>
</table>
1.3.2 Parameters for drive data sets (DDS)

The following list contains the parameters that are dependent on the drive data sets.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: DDS

- p0186[0...n] Motor Data Sets (MDS) number / MDS number
- p0187[0...n] Encoder 1 encoder data set number / Enc 1 EDS number
- p0188[0...n] Encoder 2 encoder data set number / Enc 2 EDS number
- p0189[0...n] Encoder 3 encoder data set number / Enc 3 EDS number
- p0340[0...n] Automatic calculation, motor/control parameters / Calc auto par
- p0572[0...n] Activate/de-activate inhibit list / Inh_list act/deact
- p0578[0...n] Calculate technology-dependent parameters / Calc tec par
- p0640[0...n] Current limit / Current limit
- p1001[0...n] CO: Fixed speed setpoint 1 / n_set_fixed 1
- p1002[0...n] CO: Fixed speed setpoint 2 / n_set_fixed 2
- p1003[0...n] CO: Fixed speed setpoint 3 / n_set_fixed 3
- p1004[0...n] CO: Fixed speed setpoint 4 / n_set_fixed 4
- p1005[0...n] CO: Fixed speed setpoint 5 / n_set_fixed 5
- p1006[0...n] CO: Fixed speed setpoint 6 / n_set_fixed 6
- p1007[0...n] CO: Fixed speed setpoint 7 / n_set_fixed 7
- p1008[0...n] CO: Fixed speed setpoint 8 / n_set_fixed 8
- p1009[0...n] CO: Fixed speed setpoint 9 / n_set_fixed 9
Parameters

Parameters for data sets

- p1010[0...n] CO: Fixed speed setpoint 10 / n_set_fixed 10
- p1011[0...n] CO: Fixed speed setpoint 11 / n_set_fixed 11
- p1012[0...n] CO: Fixed speed setpoint 12 / n_set_fixed 12
- p1013[0...n] CO: Fixed speed setpoint 13 / n_set_fixed 13
- p1014[0...n] CO: Fixed speed setpoint 14 / n_set_fixed 14
- p1015[0...n] CO: Fixed speed setpoint 15 / n_set_fixed 15
- p1030[0...n] Motorized potentiometer configuration / Mop configuration
- p1037[0...n] Motorized potentiometer maximum speed / MotP n_max
- p1038[0...n] Motorized potentiometer minimum speed / MotP n_min
- p1040[0...n] Motorized potentiometer starting value / Mop start value
- p1047[0...n] Motorized potentiometer ramp-up time / Mop ramp-up time
- p1048[0...n] Motorized potentiometer ramp-down time / Mop ramp-down time
- p1058[0...n] Jog 1 speed setpoint / Jog 1 n_set
- p1059[0...n] Jog 2 speed setpoint / Jog 2 n_set
- p1063[0...n] Speed limit setpoint channel / n_limit setp
- p1080[0...n] Minimum speed / n_min
- p1082[0...n] Maximum speed / n_max
- p1083[0...n] CO: Speed limit in positive direction of rotation / n_limit pos
- p1086[0...n] CO: Speed limit in negative direction of rotation / n_limit neg
- p1091[0...n] Skip speed 1 / n_skip 1
- p1092[0...n] Skip speed 2 / n_skip 2
- p1093[0...n] Skip speed 3 / n_skip 3
- p1094[0...n] Skip speed 4 / n_skip 4
- p1101[0...n] Skip speed bandwidth / n_skip bandwidth
- p1120[0...n] Ramp-function generator ramp-up time / RFG ramp-up time
- p1121[0...n] Ramp-function generator ramp-down time / RFG ramp-down time
- p1130[0...n] Ramp-function generator initial rounding-off time / RFG t_start_round
- p1131[0...n] Ramp-function generator final rounding-off time / RFG t_end_delay
- p1134[0...n] Ramp-function generator rounding-off type / RFG round-off type
- p1135[0...n] OFF3 ramp-down time / OFF3 t_RD
- p1136[0...n] OFF3 initial rounding-off time / RFGOFF3 t_strt_rnd
- p1137[0...n] OFF3 final rounding-off time / RFG OFF3 t_end_del
- p1145[0...n] Ramp-function generator tracking intensity, / RFG track intens
- p1148[0...n] Ramp-function gen., tolerance for ramp-up and ramp-down active / RFG tol HL/RL act
- p1151[0...n] Ramp-function generator configuration / RFG config
- p1169[0...n] Speed setpoint configuration / n_ctrl config
- p1200[0...n] Flying restart operating mode / FlyRest op_mode
- p1202[0...n] Flying restart search current / FlyRest I_srch
- p1203[0...n] Flying restart search rate factor / FlyRst v_Srch Fact
- p1226[0...n] Threshold for zero speed detection / n_standst n_thresh
- p1240[0...n] Vdc controller or Vdc monitoring configuration / Vdc_ctr config
- p1243[0...n] Vdc_max controller dynamic factor / Vdc_max dyn_factor
- p1245[0...n] Vdc_min controller switch-in level (kinetic buffering) / Vdc_min on_level
- p1247[0...n] Vdc_min controller dynamic factor (kinetic buffering) / Vdc_min dyn_factor
- p1249[0...n] Vdc_max controller speed threshold / Vdc_max n_thresh
- p1250[0...n] Vdc controller proportional gain / Vdc Ctrl Kp
- p1251[0...n] Vdc controller integral time / Vdc Ctrl Tn
- p1252[0...n] Vdc controller rate time / Vdc Ctrl t_rate
- p1255[0...n] Vdc_min controller time threshold / Vdc_min t_thresh
- p1256[0...n] Vdc_min controller response (kinetic buffering) / Vdc_min response
- p1257[0...n] Vdc_min controller speed threshold / Vdc_min n_thresh
- p1262[0...n] Bypass dead time / Bypass t_dead
- p1280[0...n] Vdc controller or Vdc monitoring configuration (U/f) / Vdc_ctr config U/f
<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1283[0...n]</td>
<td>Vdc_max controller dynamic factor (U/f) / Vdc_max dyn_factor</td>
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<tr>
<td>p1285[0...n]</td>
<td>Vdc_min controller switch-in level (kinetic buffering) (U/f) / Vdc_min on_level</td>
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<tr>
<td>p1287[0...n]</td>
<td>Vdc_min controller dynamic factor (kinetic buffering) (U/f) / Vdc_min dyn_factor</td>
</tr>
<tr>
<td>p1288[0...n]</td>
<td>Vdc_max controller feedback coupling factor ramp-fct. gen. (U/f) / Vdc_max factor RFG</td>
</tr>
<tr>
<td>p1289[0...n]</td>
<td>Vdc_max controller speed threshold (U/f) / Vdc_max n_thresh</td>
</tr>
<tr>
<td>p1290[0...n]</td>
<td>Vdc controller proportional gain (U/f) / Vdc_ctrl Kp</td>
</tr>
<tr>
<td>p1291[0...n]</td>
<td>Vdc controller rate time (U/f) / Vdc_ctrl t_rate</td>
</tr>
<tr>
<td>p1292[0...n]</td>
<td>Vdc min controller output limit (U/f) / Vdc_min outp_lim</td>
</tr>
<tr>
<td>p1293[0...n]</td>
<td>Vdc_min controller time threshold (U/f) / Vdc_min t_thresh</td>
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<tr>
<td>p1294[0...n]</td>
<td>Vdc_min controller response (kinetic buffering) (U/f / Vdc_min response</td>
</tr>
<tr>
<td>p1295[0...n]</td>
<td>Vdc_min controller speed threshold (U/f) / Vdc_min n_thresh</td>
</tr>
<tr>
<td>p1300[0...n]</td>
<td>Open-loop/closed-loop control operating mode / Op/cl-lp ctrl_mode</td>
</tr>
<tr>
<td>p1302[0...n]</td>
<td>U/f control configuration / U/f configuration</td>
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<tr>
<td>p1303[0...n]</td>
<td>Voltage boost permanent / U_boost perm</td>
</tr>
<tr>
<td>p1304[0...n]</td>
<td>Voltage boost at acceleration / U_boost accelerate</td>
</tr>
<tr>
<td>p1305[0...n]</td>
<td>Voltage boost when starting / U_boost starting</td>
</tr>
<tr>
<td>p1311[0...n]</td>
<td>U/f control programmable characteristic frequency 1 / Uf char f1</td>
</tr>
<tr>
<td>p1312[0...n]</td>
<td>U/f control programmable characteristic voltage 1 / Uf char U1</td>
</tr>
<tr>
<td>p1313[0...n]</td>
<td>U/f control programmable characteristic frequency 2 / Uf char f2</td>
</tr>
<tr>
<td>p1314[0...n]</td>
<td>U/f control programmable characteristic voltage 2 / Uf char U2</td>
</tr>
<tr>
<td>p1315[0...n]</td>
<td>U/f control programmable characteristic frequency 3 / Uf char f3</td>
</tr>
<tr>
<td>p1316[0...n]</td>
<td>U/f control programmable characteristic voltage 3 / Uf char U3</td>
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<tr>
<td>p1317[0...n]</td>
<td>U/f control programmable characteristic frequency 4 / Uf char f4</td>
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<td>p1318[0...n]</td>
<td>U/f control programmable characteristic voltage 4 / Uf char U4</td>
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<td>p1333[0...n]</td>
<td>U/f control FCC starting frequency / U/f FCC f_start</td>
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<tr>
<td>p1334[0...n]</td>
<td>U/f control slip compensation starting frequency / Slip comp start</td>
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<tr>
<td>p1335[0...n]</td>
<td>Slip compensation, scaling / Slip comp scal</td>
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<td>p1336[0...n]</td>
<td>Slip compensation limit value / Slip comp lim val</td>
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<tr>
<td>p1337[0...n]</td>
<td>U/f mode resonance damping gain / Uf Res_damp gain</td>
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<tr>
<td>p1338[0...n]</td>
<td>U/f mode resonance damping filter time constant / Uf Res_damp T</td>
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<tr>
<td>p1340[0...n]</td>
<td>I_max frequency controller proportional gain / I_max_ctrl Kp</td>
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<tr>
<td>p1341[0...n]</td>
<td>I_max frequency controller integral time / I_max_ctrl Tn</td>
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<tr>
<td>p1345[0...n]</td>
<td>I_max voltage controller proportional gain / I_max_U_ctrl Kp</td>
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<tr>
<td>p1346[0...n]</td>
<td>I_max voltage controller integral time / I_max_U_ctrl Tn</td>
</tr>
<tr>
<td>p1349[0...n]</td>
<td>U/f mode resonance damping maximum frequency / Uf res_damp f_max</td>
</tr>
<tr>
<td>p1350[0...n]</td>
<td>Soft starting / Soft starting</td>
</tr>
<tr>
<td>p1351[0...n]</td>
<td>CO: Motor holding brake starting frequency / Brake f_start</td>
</tr>
<tr>
<td>p1352[0...n]</td>
<td>Angular difference, symmetrizing, actual angle / Sym act angle</td>
</tr>
<tr>
<td>p1353[0...n]</td>
<td>Speed control configuration / n_ctrl config</td>
</tr>
<tr>
<td>p1354[0...n]</td>
<td>Flux control configuration / Flux ctrl config</td>
</tr>
<tr>
<td>p1355[0...n]</td>
<td>Closed-loop current control and motor model configuration / I_ctrl config</td>
</tr>
<tr>
<td>p1356[0...n]</td>
<td>Speed setpoint filter 1 time constant / n_set_fil_t 1 T</td>
</tr>
<tr>
<td>p1357[0...n]</td>
<td>Speed pre-control balancing dead time / n_prectrlBal t_dead</td>
</tr>
<tr>
<td>p1358[0...n]</td>
<td>Speed pre-control balancing time constant / n_prectrl bal T</td>
</tr>
<tr>
<td>p1359[0...n]</td>
<td>Speed controller reference model natural frequency / n_ctrl RefMod fn</td>
</tr>
<tr>
<td>p1360[0...n]</td>
<td>Speed controller reference model damping / n_ctrl RefMod D</td>
</tr>
<tr>
<td>p1361[0...n]</td>
<td>Speed controller reference model dead time / n_ctrlRefMod t_dead</td>
</tr>
<tr>
<td>p1362[0...n]</td>
<td>Actual speed smoothing time / n_act T_smooth</td>
</tr>
<tr>
<td>p1363[0...n]</td>
<td>Speed controller speed actual value smoothing time / n_ctrl n_act T_smth</td>
</tr>
<tr>
<td>p1364[0...n]</td>
<td>Motor model speed actual value smoothing time SLVC / Mot_mod n_act t_smth</td>
</tr>
<tr>
<td>p1365[0...n]</td>
<td>Speed controller speed actual value smoothing time (SLVC) / n_C n_act T_s SLVC</td>
</tr>
<tr>
<td>p1366[0...n]</td>
<td>Speed controller P gain adaptation lower starting point / n_ctrl AdaptKpLow</td>
</tr>
</tbody>
</table>
Parameters for data sets

- **p1457[0...n]** Speed controller P gain adaptation upper starting point / n_ctrl AdaptKp up
- **p1458[0...n]** Adaptation factor, lower / Adapt_factor lower
- **p1459[0...n]** Adaptation factor, upper / Adapt_factor upper
- **p1460[0...n]** Speed controller P gain adaptation speed, lower / n_ctrl Kp n lower
- **p1461[0...n]** Speed controller Kp adaptation speed, upper scaling / n_ctrl Kp n up scal
- **p1462[0...n]** Speed controller integral time adaptation speed lower / n_ctrl Tn n lower
- **p1463[0...n]** Speed controller Tn adaptation speed, upper / n_ctrl Tn n up scal
- **p1464[0...n]** Speed controller adaptation speed, lower / n_ctrl n lower
- **p1465[0...n]** Speed controller adaptation speed, upper / n_ctrl n upper
- **p1470[0...n]** Speed controller encoderless operation P-gain / n_ctrl SLVC Kp
- **p1472[0...n]** Speed controller encoderless operation integral time / n_ctrl SLVC Tn
- **p1487[0...n]** Droop compensation torque scaling / Droop M_comp scal
- **p1488[0...n]** Droop input source / Droop input source
- **p1489[0...n]** Droop feedback scaling / Droop scaling
- **p1496[0...n]** Acceleration pre-control scaling / a_prectrl scal
- **p1499[0...n]** Accelerating for torque control, scaling / a for M_ctrl scal
- **p1514[0...n]** Supplementary torque 2 scaling / M_suppl 2 scal
- **p1516[0...n]** Accelerating torque smoothing time constant / M_accel T_smooth
- **p1520[0...n]** CO: Torque limit upper / M_max upper
- **p1521[0...n]** CO: Torque limit lower / M_max lower
- **p1524[0...n]** CO: Torque limit upper scaling / M_max upper scal
- **p1525[0...n]** CO: Torque limit lower scaling / M_max lower scal
- **p1530[0...n]** Power limit motoring / P_max mot
- **p1533[0...n]** Power limit regenerative / P_max gen
- **p1556[0...n]** Power limit scaling / P_max scal
- **p1570[0...n]** CO: Flux setpoint / Flux setpoint
- **p1572[0...n]** Supplementary flux setpoint / Suppl flux setp
- **p1573[0...n]** Flux threshold value magnetizing / Flux thresh magnet
- **p1574[0...n]** Voltage reserve dynamic / U_reserve dyn
- **p1576[0...n]** Flux boost, adaptation speed, lower / Flux boost n lower
- **p1577[0...n]** Flux boost adaptation speed, upper / Flux boost n upper
- **p1580[0...n]** Efficiency optimization / Efficiency opt.
- **p1582[0...n]** Flux setpoint smoothing time / Flux setp T_smth
- **p1584[0...n]** Field weakening operation, flux setpoint smoothing time / Field weak T_smth
- **p1585[0...n]** Flux actual value, smoothing time / Flux actVal T_smth
- **p1586[0...n]** Field weakening characteristic, scaling / Field weak scal
- **p1590[0...n]** Flux controller P gain / Flux controller Kp
- **p1592[0...n]** Flux controller integral time / Flux controller Tn
- **p1594[0...n]** Field-weakening controller, P gain / Field_ctrl Kp
- **p1595[0...n]** Field weakening controller integral-action time / Field_ctrl Tn
- **p1599[0...n]** Flux controller, excitation current difference / Flux ctr I_exc_dif
- **p1600[0...n]** P flux controller, P gain / P flux ctrl Kp
- **p1604[0...n]** Pulse technique current limit / Pulse current lim
- **p1605[0...n]** Pulse technique pattern configuration / Puls pattn config
- **p1607[0...n]** Pulse technique stimulus / Puls stimulus
- **p1609[0...n]** I/f operation current setpoint / I/f op I_setp
- **p1610[0...n]** Torque setpoint static (SLVC) / M_set static
- **p1611[0...n]** Supplementary accelerating torque (SLVC) / M_suppl_accel
- **p1612[0...n]** Current setpoint magnetizing open-loop controlled / Id_set ctrl
- **p1616[0...n]** Current setpoint smoothing time / I_set T_smooth
- **p1619[0...n]** Setpoint/actual value tracking threshold / SetAct track thrsh
- **p1620[0...n]** Stator current, minimum / I_stator min
- **p1621[0...n]** Changeover speed, inner cos phi = 1 / n_chngov cos phi=1
Parameters for data sets

- p1622[0...n] Field-generating current setpoint smoothing time constant / \( I_{\text{setp}} \) \( T_{\text{smth}} \)
- p1625[0...n] Excitation current setpoint calibration / \( I_{\text{exc_setp}} \) \( \text{cal} \)
- p1628[0...n] Current model controller, dynamic factor / \( I_{\text{mod_ctr}} \) \( \text{dyn_fact} \)
- p1629[0...n] Current model controller P gain / \( I_{\text{mod_ctr}} \) \( \text{Kp} \)
- p1630[0...n] Current model controller integral time / \( I_{\text{mod_ctr}} \) \( \text{Tn} \)
- p1642[0...n] Minimum excitation current / \( \min I_{\text{exc}} \)
- p1643[0...n] Gain factor, minimum excitation current closed-loop control / \( \min I_{\text{exc}} \) \( \text{Kp} \)
- p1653[0...n] Current setpoint torque-generating smoothing time minimum / \( I_{\text{sq_s}} \) \( T_{\text{smth min}} \)
- p1654[0...n] Curr. setpoint torque-gen. smoothing time field weakening range / \( I_{\text{sq_s}} \) \( T_{\text{smth FW}} \)
- p1656[0...n] Current setpoint/Speed actual value filter activation / \( I_{\text{setp_filt}} \) \( \text{act} \)
- p1657[0...n] Current setpoint filter 1 type / \( I_{\text{set_filt}} \) 1 \( \text{Typ} \)
- p1658[0...n] Current setpoint filter 1 denominator natural frequency / \( I_{\text{set_filt}} \) 1 \( \text{fn_n} \)
- p1659[0...n] Current setpoint filter 1 denominator damping / \( I_{\text{set_filt}} \) 1 \( \text{D_n} \)
- p1660[0...n] Current setpoint filter 1 numerator natural frequency / \( I_{\text{set_filt}} \) 1 \( \text{fn_z} \)
- p1661[0...n] Current setpoint filter 1 numerator damping / \( I_{\text{set_filt}} \) 1 \( \text{D_z} \)
- p1662[0...n] Current setpoint filter 2 type / \( I_{\text{set_filt}} \) 2 \( \text{Typ} \)
- p1663[0...n] Current setpoint filter 2 denominator natural frequency / \( I_{\text{set_filt}} \) 2 \( \text{fn_n} \)
- p1664[0...n] Current setpoint filter 2 denominator damping / \( I_{\text{set_filt}} \) 2 \( \text{D_n} \)
- p1665[0...n] Current setpoint filter 2 numerator natural frequency / \( I_{\text{set_filt}} \) 2 \( \text{fn_z} \)
- p1666[0...n] Current setpoint filter 2 numerator damping / \( I_{\text{set_filt}} \) 2 \( \text{D_z} \)
- p1677[0...n] Speed actual value filter 5 type / \( n_{\text{act_filt}} \) 5 \( \text{Typ} \)
- p1678[0...n] Speed actual value filter 5 denominator natural frequency / \( n_{\text{act_filt}} \) 5 \( \text{fn_d} \)
- p1679[0...n] Speed actual value filter 5 denominator damping / \( n_{\text{act_filt}} \) 5 \( \text{D_d} \)
- p1680[0...n] Speed actual value filter 5 numerator natural frequency / \( n_{\text{act_filt}} \) 5 \( \text{fn_n} \)
- p1681[0...n] Speed actual value filter 5 numerator damping / \( n_{\text{act_filt}} \) 5 \( \text{D_n} \)
- p1702[0...n] Isd current controller pre-control scaling / \( I_{\text{sd_ctr_prectrScal}} \)
- p1703[0...n] Isq current controller pre-control scaling / \( I_{\text{sq_ctr_prectrScal}} \)
- p1704[0...n] Isq current controller pre-control EMF scaling / \( I_{\text{sq_ctr EMF scal}} \)
- p1705[0...n] Flux setpoint/actual value tracking threshold / \( \text{Flux track thresh} \)
- p1715[0...n] Current controller P gain / \( \text{I}_{\text{ctr}} \) \( \text{Kp} \)
- p1717[0...n] Current controller integral-action time / \( \text{I}_{\text{ctr}} \) \( \text{Tn} \)
- p1726[0...n] Quadrature arm decoupling, scaling / \( \text{Transv_decp1} \) \( \text{scal} \)
- p1727[0...n] Quadrature arm decoupling at voltage limit scaling / \( \text{TrnsvDecplVmaxScal} \)
- p1730[0...n] Isd controller integral component shutdown threshold / \( \text{I}_{\text{sd_ctr iCompDeac}} \)
- p1731[0...n] Isd controller combination current time component / \( \text{I}_{\text{sd ctrl iCombi}} \) \( \text{T1} \)
- p1740[0...n] Gain resonance damping for encoderless closed-loop control / \( \text{Gain res_damp} \)
- p1744[0...n] Motor model speed threshold stall detection / \( \text{MotMod n_thr stall} \)
- p1745[0...n] Motor model error threshold stall detection / \( \text{MotMod ThreshStall} \)
- p1748[0...n] Motor model lower changeover speed / \( \text{Lower n_chgov} \)
- p1749[0...n] Motor model upper changeover speed / \( \text{Upper n_chgov} \)
- p1750[0...n] Motor model configuration / \( \text{MotMod config} \)
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1.3.3 Parameters for encoder data sets (EDS)

The following list contains the parameters that are dependent on the encoder data sets.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: EDS

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- p0142[0...n] Encoder component number / Encoder comp_no
- p0144[0...n] Sensor Module detection via LED / SM detection LED
- p0145[0...n] Activate/de-activate encoder interface / Enc_intf act/deact
- r0146[0...n] Encoder interface active/inactive / Enc_intf act/inact
- r0147[0...n] Sensor Module EEPROM data version / SM EEPROM version
- r0148[0...n] Sensor Module firmware version / SM FW version
- p0400[0...n] Encoder type selection / Enc_typ sel
- p0401[0...n] Encoder type, OEM selection / Enc type OEM sel
- p0402[0...n] Gearbox type selection / Gearbox type sel
- p0404[0...n] Encoder configuration effective / Enc_config eff
- r0406[0...n] Encoder configuration active / Enc_config act
- p0407[0...n] Encoder configuration / Enc_config
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- p0411[0...n] Gearbox type selection / Gearbox type sel
- p0412[0...n] Gearbox type selection / Gearbox type sel
- p0413[0...n] Gearbox type selection / Gearbox type sel
- p0414[0...n] Gearbox type selection / Gearbox type sel
- p0415[0...n] Gearbox type selection / Gearbox type sel
- p0416[0...n] Gearbox type selection / Gearbox type sel
- p0417[0...n] Gearbox type selection / Gearbox type sel
- p0418[0...n] Gearbox type selection / Gearbox type sel
- p0419[0...n] Gearbox type selection / Gearbox type sel
- p0420[0...n] Gearbox type selection / Gearbox type sel
- p0421[0...n] Gearbox type selection / Gearbox type sel
- p0422[0...n] Gearbox type selection / Gearbox type sel
- p0423[0...n] Gearbox type selection / Gearbox type sel
- p0424[0...n] Gearbox type selection / Gearbox type sel
- p0425[0...n] Gearbox type selection / Gearbox type sel
- p0426[0...n] Gearbox type selection / Gearbox type sel
- p0427[0...n] Gearbox type selection / Gearbox type sel
- p0428[0...n] Gearbox type selection / Gearbox type sel
- p0429[0...n] Gearbox type selection / Gearbox type sel
- p0430[0...n] Gearbox type selection / Gearbox type sel
- p0431[0...n] Gearbox type selection / Gearbox type sel
- p0432[0...n] Gearbox type selection / Gearbox type sel
- p0433[0...n] Gearbox type selection / Gearbox type sel
- p0434[0...n] Gearbox type selection / Gearbox type sel
- p0435[0...n] Gearbox type selection / Gearbox type sel
- p0436[0...n] Gearbox type selection / Gearbox type.sel
- p0437[0...n] Gearbox type selection / Gearbox type.sel
- p0438[0...n] Gearbox type selection / Gearbox type.sel
- p0439[0...n] Gearbox type selection / Gearbox type.sel
- p0440[0...n] Gearbox type selection / Gearbox type.sel
- p0441[0...n] Gearbox type selection / Gearbox type.sel
- p0442[0...n] Gearbox type selection / Gearbox type.sel
- p0443[0...n] Gearbox type selection / Gearbox type.sel

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Parameters for data sets

1.3.4 Parameters for motor data sets (MDS)

The following list contains the parameters that are dependent on the motor data sets.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: MDS

- `p0131[0...n]` Motor component number / Mot comp_no
- `p0300[0...n]` Motor type selection / Mot type sel
- `p0301[0...n]` Motor code number selection / Mot code No. sel
- `r0302[0...n]` Motor code number of motor with DRIVE-CLiQ / Motor code Mot DLQ
- `r0303[0...n]` Motor with DRIVE-CLiQ status word / Motor w DLQ ZSW
- `p0304[0...n]` Rated motor voltage / Mot U_rated
- `p0305[0...n]` Rated motor current / Mot I_rated
- `p0306[0...n]` Number of motors connected in parallel / Motor qty
- `p0307[0...n]` Rated motor power / Mot P_rated
- `p0308[0...n]` Rated motor power factor / Mot cos_phi_rated
- `p0309[0...n]` Rated motor efficiency / Mot eta_rated
Parameters for data sets

- **p0310[0...n]** Rated motor frequency / Mot f_rated
- **p0311[0...n]** Rated motor speed / Mot n_rated
- **r0313[0...n]** Motor pole pair number, actual (or calculated) / Mot PolePairNo act
- **p0314[0...n]** Motor pole pair number / Mot pole pair No.
- **p0316[0...n]** Motor torque constant / Mot kT
- **p0318[0...n]** Motor stall current / Mot I_standstill
- **p0320[0...n]** Motor rated magnetizing current/short-circuit current / Mot I_mag_rated
- **p0322[0...n]** Maximum motor speed / Mot n_max
- **p0323[0...n]** Maximum motor current / Mot I_max
- **p0324[0...n]** Winding maximum speed / Winding n_max
- **p0325[0...n]** Motor pole position identification current, 1st phase / Mot PolID I 1st ph
- **p0327[0...n]** Optimum motor load angle / Mot phi_load opt
- **p0328[0...n]** Motor reluctance torque constant / Mot kT_retractance
- **p0329[0...n]** Motor pole position identification current / Mot PolID current
- **r0330[0...n]** Rated motor slip / Mot slip_rated
- **r0331[0...n]** Actual motor magnetizing current/short-circuit current / Mot I_mag_rtd act
- **r0332[0...n]** Rated motor power factor / Mot cos_phi_rated
- **r0333[0...n]** Rated motor torque / Mot M_rated
- **r0334[0...n]** Motor cooling type / Motor cooling type
- **r0335[0...n]** Motor cooling type / Motor cooling type
- **r0336[0...n]** Actual rated motor frequency / Mot f_rated act
- **r0337[0...n]** Rated motor EMF / Mot EMF_rated
- **r0339[0...n]** Rated motor voltage / Mot U_rated
- **p0341[0...n]** Motor moment of inertia / Mot M_mom of inert
- **r0342[0...n]** Ratio between the total and motor moment of inertia / Mot MmInert Ratio
- **r0343[0...n]** Rated motor current identified / Mot I_rated ident
- **r0344[0...n]** Motor weight (for the thermal motor model) / Mot weight th mod
- **r0345[0...n]** Nominal motor starting time / Mot t_start_rated
- **r0346[0...n]** Motor excitation build-up time / Mot t_excitation
- **r0347[0...n]** Motor de-excitation time / Mot t_de-excitat.
- **p0350[0...n]** Motor stator resistance, cold / Mot R_stator cold
- **p0351[0...n]** Motor series inductance / Mot L_series
- **p0352[0...n]** Motor rotor resistance cold / damping resistance d axis / Mot R_r cold/R_D d
- **p0353[0...n]** Motor damping resistance, q axis / Mot R_damp q
- **p0354[0...n]** Motor stator leakage inductance / Mot L_stator leak.
- **p0355[0...n]** Motor stator inductance, d axis / Mot L_stator d
- **p0356[0...n]** Motor rotor leakage inductance / damping inductance, d axis / Mot L_r leak / LDd
- **p0357[0...n]** Motor damping inductance, q axis / Mot L_damp q
- **p0358[0...n]** Motor magnetizing inductance/magn. inductance, d axis saturated / Mot Lh/Lh d sat
- **p0359[0...n]** Motor magnetizing inductance q axis, saturated / Mot L_magn q sat
- **p0360[0...n]** Motor saturation characteristic flux 1 / Mot saturat.flux 1
- **p0361[0...n]** Motor saturation characteristic flux 2 / Mot saturat.flux 2
- **p0362[0...n]** Motor saturation characteristic flux 3 / Mot saturat.flux 3
- **p0363[0...n]** Motor saturation characteristic flux 4 / Mot saturat.flux 4
- **p0364[0...n]** Motor saturation characteristic flux 1 / Mot sat. I_mag 1
- **p0365[0...n]** Motor saturation characteristic I_mag 2 / Mot sat. I_mag 2
- **p0366[0...n]** Motor saturation characteristic I_mag 3 / Mot sat. I_mag 3
- **p0367[0...n]** Motor saturation characteristic I_mag 4 / Mot sat. I_mag 4
- **r0370[0...n]** Motor stator resistance, cold / Mot R_stator cold
- **r0372[0...n]** Cable resistance / Mot R_cable
- **r0373[0...n]** Motor rated stator resistance / Mot R_stator rated
- **r0374[0...n]** Motor rotor resistance cold / damping resistance d axis / Mot R_r cold / RDd
Parameters

Parameters for data sets

- r0375[0...n] Motor damping resistance, q axis / Mot R_damp q
- r0376[0...n] Rated motor rotor resistance / Mot R_rotor rated
- r0377[0...n] Motor leakage inductance, total / Mot L_leak total
- r0378[0...n] Motor stator inductance, d axis / Mot L_stator d
- r0380[0...n] Motor damping inductance, d axis / Mot L_damping d
- r0381[0...n] Motor damping inductance, q axis / Mot L_damping q
- r0382[0...n] Motor magnetizing inductance transformed / Lh d axis saturated / Mot L_m tr/Lhd sat
- r0383[0...n] Motor magnetizing inductance q axis, saturated / Mot L_magn q sat
- r0384[0...n] Motor rotor time constant / damping time constant d axis / Mot T_rotor/T_Dd
- r0385[0...n] Motor damping time constant, q axis / Mot L_damping q
- r0386[0...n] Motor stator leakage time constant / Mot T_stator leak
- r0387[0...n] Motor stator leakage time constant, q axis / Mot T_Sleak /T_Sq
- p0389[0...n] Excitation rated no-load current / Exc I_noload_rated
- p0390[0...n] Rated excitation current / Exc I_rated
- p0391[0...n] Current controller adaptation, starting point KP / I_adapt pt KP
- p0392[0...n] Current controller adaptation, starting point KP adapted / I_adapt pt KP adapt
- p0393[0...n] Current controller adaptation P gain scaling / I_adapt Kp scal
- r0395[0...n] Actual stator resistance / R_stator act
- r0396[0...n] Actual rotor resistance / R_rotor act
- p0398[0...n] Angle magn decoupling (cross saturation) coeff 1 / Magn decoupl C1
- p0399[0...n] Angle magn decoupling (cross saturation) coeff 3 / Magn decoupl C3
- p0530[0...n] Bearing version selection / Bearing vers sel
- p0531[0...n] Bearing code number selection / Bearing codeNo sel
- p0532[0...n] Bearing maximum speed / Bearing n_max
- p0600[0...n] Motor temperature sensor for monitoring / Mot temp_sensor
- p0601[0...n] Motor temperature sensor type / Mot_temp_sens type
- p0604[0...n] Mot temp_mod 1/KTY alarm threshold / Mod 1/KTY A thresh
- p0605[0...n] Mot temp_mod 1/2 threshold / Threshold
- p0606[0...n] Mot temp_mod 2/KTY timer / Mod 2/KTY t_timer
- p0607[0...n] Temperature sensor fault timer / Sensor fault time
- p0610[0...n] Motor overtemperature response / Mot temp response
- p0611[0...n] I2t motor model thermal time constant / I2t mot_mod T
- p0612[0...n] Mot temp_mod activation / Mot temp_mod act
- p0615[0...n] Mot temp_mod 1 (I2t) fault threshold / I2t F thresh
- p0616[0...n] Motor overtemperature alarm threshold 1 / Mot temp alarm 1
- p0620[0...n] Thermal adaptation, stator and rotor resistance / Mot therm_adapt R
- p0621[0...n] Identification stator resistance after restart / Rst_ident Restart
- p0622[0...n] Motor excitation time for Rs_ident after powering up again / t_excit Rs_id
- p0624[0...n] Motor temperature offset PT100 / Mot T_offset PT100
- p0625[0...n] Motor ambient temperature / Mot T_ambient
- p0626[0...n] Motor overtemperature, stator core / Mot T_over core
- p0627[0...n] Motor overtemperature, stator winding / Mot T_over stator
- p0628[0...n] Motor overtemperature rotor winding / Mot T_over rotor
- r0630[0...n] Mot temp_mod ambient temperature / Mod T_ambient
- r0631[0...n] Mot temp_mod stator iron temperature / Mod T_stator
- r0632[0...n] Mot temp_mod stator winding temperature / Mod T_winding
- r0633[0...n] Mot temp_mod rotor temperature / Mod TRotor
- p0634[0...n] Q flux flux constant unsaturated / PSIQ KPSI UNSAT
- p0635[0...n] Q flux quadrature axis current constant unsaturated / PSIQ KIQ UNSAT
- p0636[0...n] Q flux direct axis current constant unsaturated / PSIQ KID UNSAT
- p0637[0...n] Q flux flux gradient saturated / PSIQ Grad SAT
- p0643[0...n] Overvoltage protection for synchronous motors / Overvolt_protect
- p0650[0...n] Actual motor operating hours / Mot t_oper act
### Parameters for data sets

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0651[...n]</td>
<td>Motor operating hours maintenance interval / Mot t_op maint</td>
</tr>
<tr>
<td>p0652[...n]</td>
<td>Motor stator resistance, scaling / Mot R_stator scal</td>
</tr>
<tr>
<td>p0653[...n]</td>
<td>Motor stator leakage inductance, scaling / Mot L_S_leak scal</td>
</tr>
<tr>
<td>p0655[...n]</td>
<td>Motor magnetizing inductance, d axis saturated scaling / Mot L_m d sat scal</td>
</tr>
<tr>
<td>p0656[...n]</td>
<td>Motor magnetizing inductance, q axis, saturated scaling / Mot L_m q sat scal</td>
</tr>
<tr>
<td>p0657[...n]</td>
<td>Motor damping inductance, d axis scaling / Mot L_damp d scal</td>
</tr>
<tr>
<td>p0658[...n]</td>
<td>Motor damping inductance, q axis scaling / Mot L_damp q scal</td>
</tr>
<tr>
<td>p0659[...n]</td>
<td>Motor damping resistance, d axis scaling / Mot R_damp d scal</td>
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<tr>
<td>p0660[...n]</td>
<td>Motor damping resistance, q axis scaling / Mot R_damp q scal</td>
</tr>
<tr>
<td>p0826[...n]</td>
<td>Motor changeover, motor number / Mot_chng mot No.</td>
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<tr>
<td>p0827[...n]</td>
<td>Motor changeover status word bit number / Motchg ZSW bitNo.</td>
</tr>
<tr>
<td>p1231[...n]</td>
<td>Armature short-circuit / DC braking configuration / ASC/DCBRK config</td>
</tr>
<tr>
<td>p1232[...n]</td>
<td>DC braking, braking current / DCBRK I_brake</td>
</tr>
<tr>
<td>p1233[...n]</td>
<td>DC braking time / DCBRK time</td>
</tr>
<tr>
<td>p1234[...n]</td>
<td>Speed at the start of DC braking / DCBRK n_start</td>
</tr>
<tr>
<td>p1236[...n]</td>
<td>Ext. armature short-c., contactor feedback signal monit. time / ASC ext t_monit</td>
</tr>
<tr>
<td>p1237[...n]</td>
<td>External armature short-circuit, delay time when opening / ASC ext t_wait</td>
</tr>
<tr>
<td>p1909[...n]</td>
<td>Motor data identification control word / MotID STW</td>
</tr>
<tr>
<td>p1960[...n]</td>
<td>PolID technique / PolID technique</td>
</tr>
<tr>
<td>p1962[...n]</td>
<td>PolID selection / PolID selection</td>
</tr>
<tr>
<td>p1991[...n]</td>
<td>Motor changeover, angular commutation correction / Ang_com corr</td>
</tr>
<tr>
<td>p1999[...n]</td>
<td>Ang. commutation offset calibr. and PolID scaling / Com_ang_offs scal</td>
</tr>
<tr>
<td>p4610[...n]</td>
<td>Motor temperature sensor 1 sensor type MDS / Temp sens1 typ MDS</td>
</tr>
<tr>
<td>p4611[...n]</td>
<td>Motor temperature sensor 2 sensor type MDS / Temp sens2 typ MDS</td>
</tr>
<tr>
<td>p4612[...n]</td>
<td>Motor temperature sensor 3 sensor type MDS / Temp sens3 typ MDS</td>
</tr>
<tr>
<td>p4613[...n]</td>
<td>Motor temperature sensor 4 sensor type MDS / Temp sens4 typ MDS</td>
</tr>
</tbody>
</table>

### 1.3.5 Parameters for power unit data sets (PDS)

The following list contains the parameters that are dependent on the power unit data sets.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: PDS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0121[...n]</td>
<td>Power unit component number / PU comp_no</td>
</tr>
<tr>
<td>p0124[...n]</td>
<td>Power unit detection via LED / PU detection LED</td>
</tr>
<tr>
<td>p0125[...n]</td>
<td>Activate/de-activate power unit components / PU_comp act/deact</td>
</tr>
<tr>
<td>r0126[...n]</td>
<td>Power unit components active/inactive / PU comp act/inact</td>
</tr>
<tr>
<td>r0127[...n]</td>
<td>Power unit version EPROM data / PU EPROM version</td>
</tr>
<tr>
<td>r0128[...n]</td>
<td>Power unit, firmware version / PU FW version</td>
</tr>
<tr>
<td>r0200[...n]</td>
<td>Power unit code number actual / PU code no. act</td>
</tr>
<tr>
<td>r0203[...n]</td>
<td>Actual power unit type / PU actual type</td>
</tr>
<tr>
<td>r0204[...n]</td>
<td>Power unit hardware properties / PU HW property</td>
</tr>
<tr>
<td>p0251[...n]</td>
<td>Operating hours counter power unit fan / PU fan t_oper</td>
</tr>
<tr>
<td>p0895[...n]</td>
<td>BI: Activate/de-activate power unit components / PU_comp act/deact</td>
</tr>
<tr>
<td>p3901[...n]</td>
<td>Power unit EEPROM Vdc offset calibration / PU EEPROM Vdc offs</td>
</tr>
<tr>
<td>p7001[...n]</td>
<td>Par_circuit power units enable / PU enable</td>
</tr>
<tr>
<td>r7002[...n]</td>
<td>Par_circuit status power units / Status PU</td>
</tr>
<tr>
<td>r7020[...n]</td>
<td>CO: Par_circuit deviation current in phase U / Phase U curr dev</td>
</tr>
<tr>
<td>r7021[...n]</td>
<td>CO: Par_circuit deviation current in phase V / Phase V curr dev</td>
</tr>
<tr>
<td>r7022[...n]</td>
<td>CO: Par_circuit deviation current in phase W / Phase W curr dev</td>
</tr>
<tr>
<td>r7030[...n]</td>
<td>CO: Par_circuit DC link voltage deviation / Vdc deviation</td>
</tr>
<tr>
<td>p7040[...n]</td>
<td>Par_circuit correction valve lockout time phase U / Comp t_lockout U</td>
</tr>
</tbody>
</table>
### Parameters for data sets

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7042[0...n]</td>
<td>Par_circuit correction valve lockout time phase V / Comp t_lockout V</td>
</tr>
<tr>
<td>p7044[0...n]</td>
<td>Par_circuit correction valve lockout time phase W / Comp t_lockout W</td>
</tr>
<tr>
<td>r7050[0...n]</td>
<td>Par_circuit circulating current phase U / Circ_I_phase U</td>
</tr>
<tr>
<td>r7051[0...n]</td>
<td>Par_circuit circulating current phase V / Circ_I_phase V</td>
</tr>
<tr>
<td>r7052[0...n]</td>
<td>Par_circuit circulating current phase W / Circ_I_phase W</td>
</tr>
<tr>
<td>r7200[0...n]</td>
<td>Par_circuit power unit overload I2t / PU overload I2t</td>
</tr>
<tr>
<td>r7201[0...n]</td>
<td>CO: Par_circuit power unit temperatures max. inverter / PU temp max inv</td>
</tr>
<tr>
<td>r7202[0...n]</td>
<td>Par_circuit power unit temperatures max. depletion layer / PU TempMaxDepLayer</td>
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<tr>
<td>r7203[0...n]</td>
<td>Par_circuit power unit temperatures max. rectifier / PU temp max rect</td>
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<td>r7204[0...n]</td>
<td>Par_circuit power unit temperatures air intake / PU temp air intake</td>
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<td>r7205[0...n]</td>
<td>Par_circuit power unit temperatures electronics / PU temp electr</td>
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<tr>
<td>r7206[0...n]</td>
<td>Par_circuit power unit temperatures inverter 1 / PU temp inv 1</td>
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<td>r7207[0...n]</td>
<td>Par_circuit power unit temperatures inverter 2 / PU temp inv 2</td>
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<tr>
<td>r7208[0...n]</td>
<td>Par_circuit power unit temperatures inverter 3 / PU temp inv 3</td>
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<tr>
<td>r7209[0...n]</td>
<td>Par_circuit power unit temperatures inverter 4 / PU temp inv 4</td>
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<td>r7210[0...n]</td>
<td>Par_circuit power unit temperatures inverter 5 / PU temp inv 5</td>
</tr>
<tr>
<td>r7211[0...n]</td>
<td>Par_circuit power unit temperatures inverter 6 / PU temp inv 6</td>
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<tr>
<td>r7212[0...n]</td>
<td>Par_circuit power unit temperatures inverter 1 / PU temp rect 1</td>
</tr>
<tr>
<td>r7213[0...n]</td>
<td>Par_circuit power unit temperatures inverter 2 / PU temp rect 2</td>
</tr>
<tr>
<td>r7214[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 1 / PU temp DepLayer 1</td>
</tr>
<tr>
<td>r7215[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 2 / PU temp DepLayer 2</td>
</tr>
<tr>
<td>r7216[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 3 / PU temp DepLayer 3</td>
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<td>r7217[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 4 / PU temp DepLayer 4</td>
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<tr>
<td>r7218[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 5 / PU temp DepLayer 5</td>
</tr>
<tr>
<td>r7219[0...n]</td>
<td>Par_circuit power unit temperatures depletion layer 6 / PU temp DepLayer 6</td>
</tr>
<tr>
<td>r7220[0...n]</td>
<td>CO: Par_circuit drive output current maximum / Drv_I_outp max</td>
</tr>
<tr>
<td>r7222[0...n]</td>
<td>CO: Par_circuit absolute current actual value / _I_act abs val</td>
</tr>
<tr>
<td>r7223[0...n]</td>
<td>CO: Par_circuit phase current actual value phase U / _I_phase U act val</td>
</tr>
<tr>
<td>r7224[0...n]</td>
<td>CO: Par_circuit phase current actual value phase V / _I_phase V act val</td>
</tr>
<tr>
<td>r7225[0...n]</td>
<td>CO: Par_circuit phase current actual value phase W / _I_phase W act val</td>
</tr>
<tr>
<td>r7226[0...n]</td>
<td>CO: Par_circuit phase current actual value phase U offset / _I_phase U offset</td>
</tr>
<tr>
<td>r7227[0...n]</td>
<td>CO: Par_circuit phase current actual value phase V offset / _I_phase V offset</td>
</tr>
<tr>
<td>r7228[0...n]</td>
<td>CO: Par_circuit phase current actual value phase W offset / _I_phase W offset</td>
</tr>
<tr>
<td>r7229[0...n]</td>
<td>CO: Par_circuit phase current actual value sum U, V, W / _I_phase sum UVW</td>
</tr>
<tr>
<td>r7230[0...n]</td>
<td>CO: Par_circuit DC link voltage actual value / Vdc_act</td>
</tr>
<tr>
<td>r7231[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase U / _U_phase U act val</td>
</tr>
<tr>
<td>r7232[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase V / _U_phase V act val</td>
</tr>
<tr>
<td>r7233[0...n]</td>
<td>CO: Par_circuit phase voltage actual value phase W / _U_phase W act val</td>
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<tr>
<td>r7240[0...n]</td>
<td>Par_circuit gating unit status word 1 / Gating unit ZSW1</td>
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</tbody>
</table>
1.4 Parameters for write protection and know-how protection

Note:
References: /FH1/ SINAMICS S120 Function Manual Drive Functions
Section "Write protection and know-how protection"

1.4.1 Parameters with "WRITE_NO_LOCK"

The following list contains the parameters with the "WRITE_NO_LOCK" attribute.
These parameters are not affected by the write protection.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: WRITE_NO_LOCK

- p0003 BOP access level / BOP acc_level
- p0009 Device commissioning parameter filter / Dev comm par filt
- p0124[0...n] Power unit detection via LED / PU detection LED
- p0124[0...23] Main component detection using LED / M_comp detect LED
- p0144[0...n] Sensor Module detection via LED / SM detection LED
- p0154 DRIVE-CLiQ Hub Module detection via LED / Hub detection LED
- p0154 Terminal Module detection via LED / TM detection LED
- p0972 Drive unit reset / Drv_unit reset
- p0976 Reset and load all parameters / Reset load all par
- p0977 Save all parameters / Save all par
- p2035 Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no
- p2102 BI: Acknowledge all faults / Ackn all faults
- p2111 Alarm counter / Alarm counter
- p3100 RTC time stamp mode / RTC t_stamp mode
- p3101[0...1] RTC set UTC time / RTC set UTC
- p3103 RTC synchronization source / RTC sync_source
- p3950 Service parameter / Serv. par.
- p3981 Faults, acknowledge drive object / Faults ackn DO
- p3985 Master control mode selection / PcCtrl mode select
- p4700[0...1] Trace control / Trace control
- p4701 Measuring function, control / Meas fct ctrl
- p4707 Measurement function configuration / Meas fct config
- p4710[0...1] Trace trigger condition / Trace Trig_cond
- p4711[0...5] Trace trigger signal / Trace trig_signal
- p4712[0...1] Trace trigger threshold / Trace trig_thres
- p4713[0...1] Trace tolerance band trigger threshold 1 / Trace trig thr 1
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- p4715[0...1] Trace bit mask trigger, bit mask / Trace trig mask
- p4716[0...1] Trace, bit mask trigger, trigger condition / Trace Trig_cond
- p4717 Measuring function, number of averaging operations / Meas fct avg qty
- p4718 Measuring function, number of stabilizing periods / MeasFct StabPerQty
- p4720[0...1] Trace recording cycle / Trace record_cyc
- p4721[0...1] Trace recording time / Trace record_time
- p4722[0...1] Trace trigger delay / Trace trig_delay
- p4723[0...1] Trace time slice cycle / Trace cycle
- p4724[0...1] Trace average in the time range / Trace average
Parameters
Parameters for write protection and know-how protection

p4730[0...5] Trace record signal 0 / Trace record sig 0
p4731[0...5] Trace record signal 1 / Trace record sig 1
p4732[0...5] Trace record signal 2 / Trace record sig 2
p4733[0...5] Trace record signal 3 / Trace record sig 3
p4734[0...5] Trace record signal 4 / Trace record sig 4
p4735[0...5] Trace record signal 5 / Trace record sig 5
p4736[0...5] Trace record signal 6 / Trace record sig 6
p4737[0...5] Trace record signal 7 / Trace record sig 7
p4780[0...1] Trace physical address signal 0 / Trace PhyAddr Sig0
p4781[0...1] Trace physical address signal 1 / Trace PhyAddr Sig1
p4782[0...1] Trace physical address signal 2 / Trace PhyAddr Sig2
p4783[0...1] Trace physical address signal 3 / Trace PhyAddr Sig3
p4784[0...1] Trace physical address signal 4 / Trace PhyAddr Sig4
p4785[0...1] Trace physical address signal 5 / Trace PhyAddr Sig5
p4786[0...1] Trace physical address signal 6 / Trace PhyAddr Sig6
p4787[0...1] Trace physical address signal 7 / Trace PhyAddr Sig7
p4789[0...1] Trace physical address trigger signal / Trace PhyAddr Trig
p4795 Trace memory bank changeover / Trace mem changeov
p4800 Function generator control / FG control
p4810 Function generator mode / FG operating mode
p4812 Function generator physical address / FG phys address
p4813 Function generator physical address reference value / FG phys addr ref
p4815[0...2] Function generator drive number / FG drive number
p4816 Function generator output signal integer number scaling / FG outp integ scal
p4819 Bl: Function generator control / FG control
p4820 Function generator signal shape / FG signal shape
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p7761 Write protection / Write protection
p7770 NVRAM action / NVRAM action
p8550 AOP LOCAL/REMOTE / AOP LOCAL/REMOTE
p8829 CBE20 remote controller number / CBE20 rem ctrl num
p9210 Flashing component number / Flash comp_no.
p9211 Flash function / Flash fct.
p9484 BICO interconnections search signal source / BICO S_src srch
1.4.2 Parameters with "KHP_WRITE_NO_LOCK"

The following list contains the parameters with the "KHP_WRITE_NO_LOCK" attribute. These parameters are not affected by the know-how protection.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: KHP_WRITE_NO_LOCK

- p0003 BOP access level / BOP acc_level
- p0009 Device commissioning parameter filter / Dev comm par_filt
- p0124[0...n] Power unit detection via LED / PU detection LED
- p0124[0...23] Main component detection using LED / M_comp detect LED
- p0144[0...n] Sensor Module detection via LED / SM detection LED
- p0154 DRIVE-CLiQ Hub Module detection via LED / Hub detection LED
- p0154 Terminal Module detection via LED / TM detection LED
- p0972 Drive unit reset / Drv_unit reset
- p0976 Reset and load all parameters / Reset load all par
- p0977 Save all parameters / Save all par
- p2035 Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no
- p2102 BI: Acknowledge all faults / Ackn all faults
- p2111 Alarm counter / Alarm counter
- p3100 RTC time stamp mode / RTC t_stamp mode
- p3101[0...1] RTC set UTC time / RTC set UTC
- p3103 RTC synchronization source / RTC sync_source
- p3950 Service parameter / Serv. par.
- p3981 Faults, acknowledge drive object / Faults ackn DO
- p3985 Master control mode selection / PcCtrl mode select
- p7761 Write protection / Write protection
- p7770 NVRAM action / NVRAM action
- p8550 AOP LOCAL/REMOTE / AOP LOCAL/REMOTE
- p8829 CBE20 remote controller number / CBE20 rem ctrl num
- p9210 Flashing component number / Flash comp_no.
- p9211 Flash function / Flash fct.
- p9484 BICO interconnections search signal source / BICO S_src srcrch

1.4.3 Parameters with "KHP_ACTIVE_READ"

The following list contains the parameters with the "KHP_ACTIVE_READ" attribute. These parameters can also be read with activated know-how protection.

Product: SINAMICS G130/G150, Version: 4502400, Language: eng, Type: KHP_ACTIVE_READ

- p0015 Macro drive object / Macro DO
- p0015 Macro drive unit / Macro drv unit
- p0100 IEC/NEMA mot stds / IEC/NEMA mot stds
- p0101[0...23] Drive object numbers / DO numbers
- p0103[0...23] Application-specific view / Appl_spec view
- p0105 Activate/de-activate drive object / DO act/deact
- p0107[0...23] Drive object type / DO type
- p0108[0...23] Drive objects, function module / DO function module
- p0120 Number of Power unit Data Sets (PDS) / PDS count
- p0121[0...n] Power unit component number / PU comp_no
- p0125[0...n] Activate/de-activate power unit components / PU_comp act/deact
- p0130 Number of Motor Data Sets (MDS) / MDS count
### Parameters for write protection and know-how protection

- **p0131[0...n]** Motor component number / Mot comp_no
- **p0140** Number of Encoder Data Sets (EDS) / EDS count
- **p0141[0...n]** Encoder interface (Sensor Module) component number / Enc_interf comp_no
- **p0142[0...n]** Encoder component number / Encoder comp_no
- **p0145[0...n]** Activate/de-activate encoder interface / Enc_intf act/deact
- **p0150** Number of VSM data sets / VSM dat_sets qty.
- **p0151[0...1]** DRIVE-CLiQ Hub Module component number / Hub comp_no
- **p0151** Terminal Module component number / TM comp_no
- **p0151[0...n]** Voltage Sensing Module component number / VSM comp_no
- **p0161** Option board, component number / Opt board comp_no
- **p0170** Number of Command Data Sets (CDS) / CDS count
- **p0180** Number of Drive Data Sets (DDS) / DDS count
- **p0199[0...24]** Drive object name / DO name
- **p0300[0...n]** Motor type selection / Mot type sel
- **p0304[0...n]** Rated motor voltage / Mot U_rated
- **p0305[0...n]** Rated motor current / Mot I_rated
- **p0400[0...n]** Encoder type selection / Enc_typ sel
- **p0505** Selecting the system of units / Unit sys select
- **p0595** Technological unit selection / Tech unit select
- **p0806** BI: Inhibit master control / PcCtrl inhibit
- **p0864** BI: Infeed operation / INF operation
- **p0922** IF1 PROFidrive telegram selection / IF1 PD Telegr_sel
- **p0978[0...24]** List of drive objects / List of the DO
- **p1080[0...n]** Minimum speed / n_min
- **p1082[0...n]** Maximum speed / n_max
- **p1520[0...n]** CO: Torque limit upper / M_max upper
- **p2000** Reference frequency / f_ref
- **p2000** Reference speed reference frequency / n_ref f_ref
- **p2000** Reference velocity, reference frequency / v_ref f_ref
- **p2001** Reference voltage / Reference voltage
- **p2002** Reference current / I_ref
- **p2003** Reference torque / M_ref
- **p2005** Reference angle / Reference angle
- **p2006** Reference temp / Ref temp
- **p2007** Reference acceleration / a_ref
- **p2030** Field bus int protocol selection / Field bus protocol
- **p2038** IF1 PROFi drive STW/ZSW interface mode / PD STW/ZSW IF mode
- **p2079** IF1 PROFi drive PZD telegram selection extended / IF1 PD PZD tel ext
- **p4956[0...n]** OA application activation / OA act
- **p7763** KHP OEM exception list number of indices for p7764 / KHP OEM qty p7764
- **p7764[0...n]** KHP OEM exception list / KHP OEM excep list
- **p7852** Number of indices for r7853 / Qty indices r7853
- **p9500** SI Motion monitoring clock cycle (Control Unit) / SI Mtn clock CU
- **p9601** SI enable, functions integrated in the drive (Control Unit) / SI enable fct CU
- **p9810** SI PROFi safe address (Motor Module) / SI PROFi safe MM
- **p9902** Target topology number of indices / TargetTopo indices
# Function diagrams

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# 2.2 Explanations on the function diagrams

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### Parameter

- **Symbol**: Parameter name (Unit)
- **Meaning**: Monitoring parameter (parameter may appear several times if the parameter appears a multiple number of times, then diagram references are specified).

### Connectors

- **Symbol**: pxxxx
- **Meaning**: Connector input CI.

### Binectors

- **Symbol**: rxxxx
- **Meaning**: Binector input BI with index [y] and factory setting (Def).

### Cross references between diagrams

- **Symbol**: [aaaa] Text = Unique signal designation
- **Meaning**: Signal goes to target diagram aaaa

### Connectors/binectors

- **Symbol**: pxxxx
- **Meaning**: Original parameter of signal

### Cross references for control bits

- **Symbol**: [aaaa] Text = Unique signal designation
- **Meaning**: Signal goes to signal path aaaa

### Sampling times

- **Symbol**: p0115
- **Meaning**: Time slice depending on the pre-setting of the drive object.

### Explanations on the function diagrams

- **Function diagram number, signal path**: fp_1020_51_eng.vsd
- **Diagram references for setting parameters that occur a multiple number of times**: DO: All objects
- **Diagram references for setting parameters that occur a multiple number of times**: SINAMICS

---

**Parameters in Function Diagrams**

- **Parameter name**: pxxxx
- **Meaning**: Parameter number (xxxx) with Index number [y] and bit number [w].

- **Parameter name**: [aaaa] Text = Signal goes to source diagram aaaa
- **Meaning**: Signal comes from source diagram aaaa

- **Parameter name**: p0115
- **Meaning**: Time slice depending on the pre-setting of the drive object.

- **Parameter name**: p0115
- **Meaning**: Time slice depending on the rated pulse frequency of the motor module.

- **Parameter name**: p0115
- **Meaning**: Time slice depending on the rated pulse frequency of the motor module.

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- **Meaning**: Time slice depending on the rated pulse frequency of the motor module.

---

**Sampling times**

- **Symbol**: p0115
- **Meaning**: Time slice depending on the pre-setting of the drive object.

- **Symbol**: p0115
- **Meaning**: Time slice depending on the pre-setting of the drive object.

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- **Meaning**: Time slice depending on the pre-setting of the drive object.

---

**Explanations on the function diagrams**

- **Function diagram number, signal path**: fp_1020_51_eng.vsd
- **Diagram references for setting parameters that occur a multiple number of times**: DO: All objects
- **Diagram references for setting parameters that occur a multiple number of times**: SINAMICS
Symbols for logic functions

- **Logical inversion**
- **AND element**
  with logical inversion of an input signal
- **R/S flip-flop**
  \[ y = -x \]
  \[ y = |x| \]
  \[ y = \frac{2}{x} \]
- **Comparator**
  Output \( y = 1 \) if the analog signal \( x > 0 \), i.e., is positive.
- **Exclusive-OR/XOR**
  \( y = 1 \) when \( x_1 \neq x_2 \) is.

Symbols for computational and closed-loop control functions

- **Sign reversal**
  \( y = -x \)
- **Absolute value generator**
  \( y = |x| \)
- **Divider**
  \( y = \frac{x}{x_1} \)
- **Comparator**
  Output \( y = 1 \) if the analog signal \( x > 0 \), i.e., is positive.
- **Differentiator**
  \( y = \frac{dx}{dt} \)
- **Threshold value switch 1/0**
  Outputs at \( y \) a logical "1" if \( x < S \).
- **Threshold value switch 0/1**
  Outputs at \( y \) a logical "1" if \( x > S \).
- **Threshold value 1/0 with hysteresis**
  Outputs a logical "1" at \( y \) if \( x < S \). If \( x >= S + H \) then \( y \) returns to 0.
- **Threshold value 0/1 with hysteresis**
  Outputs a logical "1" at \( y \) if \( x > S \). If \( x <= S - H \) then \( y \) returns to 0.
- **Limiter**
  \( x \) is limited to the upper limit \( LU \) and the lower limit \( LL \) and output at \( y \).
  The digital signals \( MLU \) and \( MLL \) have the value "1", if the upper or lower limit is active.
- **Sample & Hold element**
  Sample and hold element. \( y = x \) if \( SET = 1 \) (not retentively saved at POWER OFF).

Explanations for the function diagrams - Explanation of the symbols (Part 2)
Switch-on delay

The digital signal x must have the value "1" without any interruption during the time T before output y changes to "1".

Switch-off delay

The digital signal x must have the value "0" without interruption during the time T before output y changes to "0".

Delay (switch-on and switch-off)

The digital signal x must have the value "1" without interruption during time T1 or must have the value "0" during time T2 before output y changes its signal state.

PT1 element

Delay element, first order.

\[ p_{\text{xxxx}} = \text{time constant} \]

2nd-order filter (bandstop/general filter)

Natural frequency, numerator
\[ f_{\text{n},z} \]

Damping, numerator
\[ D_{\text{z},n} \]

Natural frequency, denominator
\[ f_{\text{n},n} \]

Damping, denominator
\[ D_{\text{n},n} \]

Used as bandstop filter - center frequency \( f_s \):

\[ f_{\text{n},z} = f_s \]

\[ f_{\text{n},n} = f_s \]

- bandwidth \( f_B \):

\[ D_{\text{z},n} = 0 \]

\[ D_{\text{n},n} = \frac{f_B}{f_s^2} \]

Transfer function when used as general filter

\[
H(s) = \frac{s^2 + 2 \cdot D_z \cdot s + 1}{s^2 + 2 \cdot D_n \cdot s + 1}
\]

Analog adder can be activated

The following applies to \( I = 1 \) signal: \( y = x_1 + x_2 \)

The following applies to \( I = 0 \) signal: \( y = x_1 \)
Handling BICO technology

Binectors are binary signals that can be freely interconnected (BO = Binector Output). They represent a bit of a "BO:" display parameter (e.g. bit 15 from r0723).

Connectors are bit fields or numerical values that can be freely interconnected (e.g. "analog signals", like percentage variables, speeds or torques). Connectors are also "CO:" display parameters (CO = Connector Output).

**Parameterization:**
At the signal destination, the required binector or connector is selected using appropriate parameters:
- "B1:" parameter for binectors (BI = Binector Input)
- "C1:" parameter for connectors (CI = Connector Input)

**Example:**
The main setpoint for the speed controller (CI: p1070) should be received from the output of the motorized potentiometer (CO: r1050) and the "jog" command (BI: p1055) from digital input DI 0 (BO: r0722.0, X122.1 terminal) on the CU320.

**Parameterizing steps:**
1. p1055[0] = 722.0 Terminal X122.1 acts as "Jog bit 0".
2. p1070[0] = 1050 The output of the motorized potentiometer acts as main setpoint for the speed controller.
## 2.3 Overviews

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<td>Vector control, speed control and generation of the torque limits</td>
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<td>Terminal Module 54F (TM54F)</td>
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</table>
For SERVO and VECTOR (except for G130/G150), the following applies:

1. Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<table>
<thead>
<tr>
<th>Input/Output Terminals</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>DI 0 … DI 7, DI 16, DI 17, DI 20, DI 21</td>
<td>Jumper open, electrical isolation</td>
</tr>
<tr>
<td>Digital Inputs</td>
<td></td>
</tr>
<tr>
<td>Digital Outputs (DO)</td>
<td></td>
</tr>
</tbody>
</table>

Simulation for DI 0…DI 21

- Simulation signals: p0796.0…21
- Simulation on: p0795.0…21
- +24 V DC to the next device: X124
- Simulation off: p0795.0…21

For CU320-2 simulation:

- Simulation on: p0795.0…21
- Simulation off: p0795.0…21

- Simulation signals: p0796.0…21
- Simulation on: p0795.0…21
- +24 V DC to the next device: X124
- Simulation off: p0795.0…21

- Simulation signals: p0796.0…21
- Simulation on: p0795.0…21
- +24 V DC to the next device: X124
- Simulation off: p0795.0…21

- Simulation signals: p0796.0…21
- Simulation on: p0795.0…21
- +24 V DC to the next device: X124
- Simulation off: p0795.0…21

- Simulation signals: p0796.0…21
- Simulation on: p0795.0…21
- +24 V DC to the next device: X124
- Simulation off: p0795.0…21
Fig. 2-6 1520 – PROFIdrive

Interconnecting the permanently assigned receive telegrams

Interconnecting the permanently assigned send telegrams

Interconnecting the free receive telegram

Interconnecting the free send telegram

Signal Description Interconnection

... ... ...

[2438] ... [2447] [2495] [2497]

[2449] ... [2457] [2496] [2498]

[2483] [2470] [2472] [2468] [2481] [2496] [2498]

Signal assignment PZD1 ...

PZD3

PB adress p0918

Monitoring

Diagnostics

Axxxxx Fxxxxx nxxxx

Receive telegram

Send telegram

Drive n

Drive n

OVERVIEWS

Function diagrams

DO: All objects

Overviews - PROFIdrive

fp_1520_54_eng.vsd

Function diagram

21.11.11 V04.05.00

S120/S150/G130/G150

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Fig. 2-8 1550 – Setpoint channel

DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL

Overviews - Setpoint channel

<1> Only for SERVO.

- 1550 -
Fig. 2-9 1680 – Vector control, encoder evaluations (position, speed, temperature)

Raw signal sensing

Faults/alarms

Raw position signals

1680

DO: VECTOR

Overviews - Vector control, encoder evaluations (position, speed, temperature)

Encoder Data Sets (EDS)

3 encoder data sets

养·

p0187...p0189

p0400...p0425

Eds[0]

Eds[1]

Eds[2]

No encoder

1

2

99

<1>

<1> Only 1 encoder for G130/G150.
DO: VECTOR

Overviews - Vector control, U/f control

Fig. 2-10 1690 – Vector control, U/f control

- 1690 -

Function diagram

fp_1690_54_eng.vsd

Refer to [1020.7]

<1> Only for p1300 = 19 and p1302.1 = 1.
Fig. 2-11 1700 – Vector control, speed control and generation of the torque limits

- Vector control without encoder.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: VECTOR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overviews - Vector control, speed control and generation of the torque limits</td>
<td>fp_1700_54_eng.vsd</td>
<td></td>
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</tr>
</tbody>
</table>

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For Kp adaptation

For Kp adaptation

<1> Only for vector control without encoder.
Overviews
Function diagrams

Fig. 2-12  1710 – Vector control, current control

<table>
<thead>
<tr>
<th>Field weakening characteristic, Id setpoint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field weakening control, flux controller for induction motors (p0300 = 1)</td>
</tr>
<tr>
<td>Field weakening controller for synchronous motors (p0300 = 2)</td>
</tr>
<tr>
<td>Flux setpoint, field weakening controller (FEM, p0300 = 5)</td>
</tr>
</tbody>
</table>

Current controller

- Current model (Observer)
- Motor model

Transformation

Modulation depth

Vdc_act

U_output

V_set

V_angle

V_phase actual value

I_phase actual value

<1> Only for vector control without encoder.
<2> Only for SINAMICS S120/S150.

Refer to [1020.7]

Field weakening
controller

Current calculation

Id_set

V_output max

V_set

Iq_set

Transformation

iq controller

K

Vdc_act

U_output

V_set

V_angle

V_phase actual value

I_phase actual value

<1> Only for SINAMICS S120/S150.
<2> Only for SINAMICS S120/G130.

DO: VECTOR

Overviews - Vector control, current control

fp_1710_54_eng.vsd

Function diagram

S120/S150/G130/G150

- 1710 -
Fig. 2-14 1773 – Basic Infeed

**PROFdrive receive/send telegram**
- Slave address
- Diagnostics
- Interconnection of the free receive and send telegrams

**Line supply voltage monitoring**

**Thermal power module monitoring**
\[ \Theta > \Theta_{\text{max}} \]

**Faults and alarms**
\[ F_{\text{xxxx}} \]
\[ A_{\text{xxxx}} \]

**Gating signals, actual values**

**Energize contactor**

**Pre-charging**

**To the Motor Modules**

*<1> Only for S120 and G150.*
Fig. 2-15 1790 – Terminal Board 30 (TB30)

- Simulation for DI 0...DI 3

4 digital inputs, electrically isolated

4 digital outputs, electrically isolated

2 analog inputs +/-11 V

2 analog outputs +/-11 V

Reference quantities for 10 V or 100 %

Simulation signals p4096.0_3

p4099 (4000.00 μs)

Simulation for DI 0...DI 3

1 = Simulation on p4095.0...3

Simulation signals p4096.0_3
Fig. 2-17 1850 – Terminal Module 54F (TM54F)

- 1850 -

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## 2.4 CU320-2 input/output terminals

**Function diagrams**

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<th>Function Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>2120 – Digital inputs, electrically isolated (DI 0 ... DI 3, DI 16, DI 17)</td>
<td>2-1000</td>
</tr>
<tr>
<td>2121 – Digital inputs, electrically isolated (DI 4 ... DI 7, DI 20, DI 21)</td>
<td>2-1001</td>
</tr>
<tr>
<td>2130 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)</td>
<td>2-1002</td>
</tr>
<tr>
<td>2131 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)</td>
<td>2-1003</td>
</tr>
<tr>
<td>2132 – Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)</td>
<td>2-1004</td>
</tr>
<tr>
<td>2133 – Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)</td>
<td>2-1005</td>
</tr>
</tbody>
</table>
Fig. 2-18 2120 – Digital inputs, electrically isolated (DI 0 ... DI 3, DI 16, DI 17)

When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.

<1> When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.


CU320-2 input/output terminals - Digital inputs, electrically isolated (DI 0 ... DI 3, DI 16, DI 17)

fp_2120_51_eng.vsd 07.12.11 V04.05.00 SINAMICS
Fig. 2-19
2121 – Digital inputs, electrically isolated (DI 4 ... DI 7, DI 20, DI 21)

<1> When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.

<1> When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.


CU320-2 input/output terminals - Digital inputs, electrically isolated (DI 4 ... DI 7, DI 20, DI 21)
Fig. 2-20

2130 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)

<1> The connection shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies:
For fast measuring probes inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

24 V DC to the next device

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>

CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)

fp_2130_51_eng.vsd

Function diagram

SINAMICS
Fig. 2-21
2131 - Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)

<1> The connection shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies:
Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: CU_G, CU_GL, CU_GM, CU_MV, CU_S, CU_SL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>fp_2131_51_eng.vsd</td>
<td>Function diagram</td>
<td>- 2131 -</td>
</tr>
<tr>
<td>CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>07.12.11 V04.05.00</td>
<td>SINAMICS</td>
<td></td>
</tr>
</tbody>
</table>
Fig. 2-22  
CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)

<1> The connection shown as a dashed line applies when used as digital output (p0728.x = 1).

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies:
Can be used as fast measuring probe inputs (refer to [4735], [4740]).

<3> The digital output access authority is displayed in r0729.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: CU_G, CU_GL, CU_GM, CU_MV, CU_S, CU_SL</td>
<td>p0799[0] (4000.00 μs)</td>
<td>Function diagram</td>
<td>fp_2132_51_eng.vsd</td>
<td>SINAMICS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 12 ... DI/DO 13)
24 V DC to the next device
p0799[0] (4000.00 μs)

+24 V

X124.+

X124.M

DI/DO 14
inverted
p0796.14 (0)

X124.M

M
r0721.14

p0728.14 (0)
DI
X132.12

15

r0723

M

+
DI/DO 14
<3>

1

r0723.14
r0722.14

DI
0

p0748.14 (0)

DO

r0722

1

24 V
1

15

p0795.14 (0)

DI 14_probe
<2>

0

DI/DO 14

CU S_src DI/DO 14
0

DO

<1>

1

p0744
(0)

1

1

r0747.14
0

0

p0796.15 (0)

r0721.15

p0728.15 (0)
DI
X132.13

DI/DO 15
<3>

p0795.15 (0)

1

DI 15_probe
<2>

r0723.15

1

r0722.15

DI
0

p0748.15 (0)

0

5V
1

DO

CU S_src DI/DO 15
0

DO

<1>

1

p0745
(0)

1

M

r0747.15
0

2-1005

<1> The connection shown as a dashed line applies
when used as digital output (p0728.x = 1).

0

<2> For SERVO and VECTOR (except for SINAMICS G130/G150), the following applies:
Can be used as fast measuring probe inputs (refer to [4735], [4740]).
<3> The digital output access authority is displayed in r0729.

1
2
3
4
5
CU320-2 input/output terminals - Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)

6
fp_2133_51_eng.vsd
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7
Function diagram
SINAMICS

8
- 2133 -

Function diagrams

1

X132.14

CU320-2 input/output terminals

2133 – Digital inputs/outputs, bidirectional (DI/DO 14 ... DI/DO 15)

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Fig. 2-23

X124.+


2.5 CU_LINK

Function diagrams

2211 – Data transfer 2-1007
**Fig. 2-24 2211 – Data transfer**

- **Function diagrams**

```
<1> The drive object CU_LINK only exists for automation systems with SINAMICS Integrated (e.g. SIMOTION D, SINUMERIK NCU) and the corresponding controller extension (e.g. CX32-2, NX10).

<2> p8800: CU_LINK address.

- Address of the controller extension, represented by the drive object CU_LINK. The address correlates with the DRIVE-CLiQ socket of the control unit connected to the controller extension configured.
- Value range: See p0918 (PROFIBUS address)
- The parameter p8800 is only readable through non-cyclic parameter access via DPV1 services.
```

**Controller Extension**

- **DO: CU_LINK (master)**
- **DO: CU_CX32 (slave)**

**Data transfer**

- **Data transfer wordwise 0**
- **Data transfer wordwise 1**
- **Data transfer wordwise 2**
- **Data transfer wordwise 3**

**Digital signals**

- Data transfer bitwise 0
- Data transfer bitwise 1
- Data transfer bitwise 0
- Data transfer bitwise 1
### 2.6 PROFIdrive

#### Function diagrams

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<th>Description</th>
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<tr>
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<td>Standard telegrams and process data 2</td>
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<tr>
<td>2419</td>
<td>Manufacturer-specific telegrams and process data 1</td>
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<tr>
<td>2420</td>
<td>Manufacturer-specific telegrams and process data 2</td>
<td>2-1014</td>
</tr>
<tr>
<td>2421</td>
<td>Manufacturer-specific telegrams and process data 3</td>
<td>2-1015</td>
</tr>
<tr>
<td>2422</td>
<td>Manufacturer-specific telegrams and process data 4</td>
<td>2-1016</td>
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<tr>
<td>2423</td>
<td>Manufacturer-specific/free telegrams and process data</td>
<td>2-1017</td>
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<td>STW1_BM control word metal industry interconnection</td>
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<tr>
<td>2426</td>
<td>STW2_BM control word metal industry interconnection</td>
<td>2-1019</td>
</tr>
<tr>
<td>2427</td>
<td>E_STW1_BM control word infeed metal industry interconnection</td>
<td>2-1020</td>
</tr>
<tr>
<td>2428</td>
<td>ZSW1_BM status word metal industry interconnection</td>
<td>2-1021</td>
</tr>
<tr>
<td>2429</td>
<td>ZSW2_BM status word metal industry interconnection</td>
<td>2-1022</td>
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<tr>
<td>2430</td>
<td>E_ZSW1_BM control word infeed metal industry interconnection</td>
<td>2-1023</td>
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<tr>
<td>2439</td>
<td>PZD receive signals, interconnection, profile-specific</td>
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<td>PZD receive signals, interconnection, manufacturer-specific</td>
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<tr>
<td>2441</td>
<td>STW1 control word interconnection (p2038 = 2)</td>
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<tr>
<td>2442</td>
<td>STW1 control word interconnection (p2038 = 0)</td>
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<tr>
<td>2444</td>
<td>STW2 control word interconnection (p2038 = 0)</td>
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<td>2447</td>
<td>E_STW1 control word infeed interconnection</td>
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<td>2449</td>
<td>PZD send signals, interconnection, profile-specific</td>
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<tr>
<td>2450</td>
<td>PZD send signals interconnection manufacturer-specific</td>
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<td>2451</td>
<td>ZSW1 status word interconnection (p2038 = 2)</td>
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<tr>
<td>2452</td>
<td>ZSW1 status word interconnection (p2038 = 0)</td>
<td>2-1033</td>
</tr>
<tr>
<td>2454</td>
<td>ZSW2 status word interconnection (p2038 = 0)</td>
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<td>2457</td>
<td>E_ZSW1 status word infeed interconnection</td>
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<td>2468</td>
<td>IF1 receive telegram, free interconnection via BICO (p0922 = 999)</td>
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<tr>
<td>Code</td>
<td>Description</td>
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<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>2470</td>
<td>IF1 send telegram, free interconnection via BICO (p0922 = 999)</td>
<td>2-1037</td>
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<td>2472</td>
<td>IF1 status words, free interconnection</td>
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<tr>
<td>2481</td>
<td>IF1 receive telegram, free interconnection via BICO (p0922 = 999)</td>
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<td>2483</td>
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<td>2487</td>
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<td>IF2 status words, free interconnection</td>
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<td>2491</td>
<td>IF2 receive telegram, free interconnection</td>
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<td>2493</td>
<td>IF2 send telegram, free interconnection</td>
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<td>2495</td>
<td>CU_STW1 control word 1, Control Unit interconnection</td>
<td>2-1046</td>
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<td>2496</td>
<td>CU_ZSW1 status word 1, Control Unit interconnection</td>
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<td>2497</td>
<td>A_DIGITAL interconnection</td>
<td>2-1048</td>
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<td>2498</td>
<td>E_DIGITAL interconnection</td>
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<td>A_DIGITAL_1 interconnection</td>
<td>2-1050</td>
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<tr>
<td>2500</td>
<td>E_DIGITAL_1 interconnection</td>
<td>2-1051</td>
</tr>
</tbody>
</table>
Fig. 2-25 2410 – PROFIBUS (PB) / PROFINET (PN), addresses and diagnostics

### CU-specific functions

**Setting the PROFIBUS address**

- PB PZD state Setpoint failure
  - PB state t_monit p2047

- PD PZD state Clock cycle synchronous operation active
  - r2043.0

**Address switches on the Control Unit**

- DP ADDRESS
  - DP H
  - DP L

Example: 15 hex = 21 dez

**Setting the PROFIBUS address**

- Via p0918:
  - Set the address switches DP H and DP L to 00 hex (= 0 dez), 7F hex (= 127 dez), 80 hex or FF hex.

- Via the address switches DP H and DP L:
  - Set the desired address as hexa-decimal value between 01 hex (= 1 dez) and 7E hex (= 126 dez).

Any change only becomes effective after a POWER ON.

**PB address**

- p0918 (126)

**Monitoring functions**

- Cyclic telegrams from the master

**PD PZD state**

- r2054

**Diagnostic parameters**

- PB diag standard r2055[0...2]

- PB diag clock sync r2064[0...7]

### Drive-specific functions (available once for each drive object)

**Drive-specific functions**

- **POWER ON**
  - Memory
  - SET
  - PB addr switch dia r2057

- **PD PZD state**
  - Clock cycle synchronous operation active

- **PD status**
  - r2054

- **PB diag standard**
  - r2055[0...2]

### PROFIBUS sampling time

Refer to [1020.7]

### Setting the PROFIBUS address

- Via p0918:
  - Set the address switches DP H and DP L to 00 hex (= 0 dez), 7F hex (= 127 dez), 80 hex or FF hex.

- Via the address switches DP H and DP L:
  - Set the desired address as hexa-decimal value between 01 hex (= 1 dez) and 7E hex (= 126 dez).

Any change only becomes effective after a POWER ON.

**PB address**

- p0918 (126)

**Monitoring functions**

- Cyclic telegrams from the master

**PD PZD state**

- r2054

**Diagnostic parameters**

- PB diag standard r2055[0...2]

- PB diag clock sync r2064[0...7]

### PROFIBUS sampling time

Refer to [1020.7]

### Setting the PROFIBUS address

- Via p0918:
  - Set the address switches DP H and DP L to 00 hex (= 0 dez), 7F hex (= 127 dez), 80 hex or FF hex.

- Via the address switches DP H and DP L:
  - Set the desired address as hexa-decimal value between 01 hex (= 1 dez) and 7E hex (= 126 dez).

Any change only becomes effective after a POWER ON.

**PB address**

- p0918 (126)

**Monitoring functions**

- Cyclic telegrams from the master

**PD PZD state**

- r2054

**Diagnostic parameters**

- PB diag standard r2055[0...2]

- PB diag clock sync r2064[0...7]
Fig. 2-26 2415 – Standard telegrams and process data

- Depending on the drive object, only specific telegrams can be used. Not suitable for sensorless vector control.
- If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2424].
- The maximum number of PZD words depends on the drive object type.
- Only for SINAMICS S120/S150.

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= Position encoder signal

- Refer to [1020.7]

DO: ENC, SERVO, VECTOR

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1. Depending on the drive object, only specific telegrams can be used. Not suitable for sensorless vector control.
2. If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
3. If p0922 = 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
4. Freely interconnectable (pre-setting: MELD NAMUR).
5. The maximum number of PZD words depends on the drive object type.
6. Only for ENCODER.

**Notes:**
- Position encoder signal
- Interconnection is made according to [2440] [2450] automatically
- Refer to [1020.7]

**Function Diagram:**
- Fig. 2-27
- fp_2416_54_eng.vsd

**Related Documents:**
- SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

**Technical Details:**
- 22.11.11 V04.05.00
- S120/S150/G130/G150
Interconnection is made according to Telegram
Appl.- Class 1, 4 1, 4 4 DSC 4 DSC 4 DSC 3 3 3 3 4 DSC

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<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
<3> If p0922 = 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423]!
<4> The maximum number of PZD words depends on the drive object type.
<5> Only for SINAMICS S120/S150.

= Position encoder signal

Fig. 2-28
PROFIdrive – Manufacturer-specific telegrams and process data 1

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Function diagrams

Table 2-29 2420 – Manufacturer-specific telegrams and process data

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<1> Depending on the drive object, only specific telegrams can be used.  
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].  
<3> Only for SINAMICS S120/S150.  
<4> The maximum number of PZD words depends on the drive object type.  
<5> Only if the “DSC with Spline” function module is active (r0108.6 = 1).  
<6> Only if the “Spindle” function module is active (r0108.11 = 1).  
<7> Only for SINAMICS S120.

= Position encoder signal

PD Telegr_select

p0922 (999)

<2>

If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].

If p0922 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].

Refer to [1020.7] PROFIsafe sampling time

Function diagrams

SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

Fig. 2-29 2420 – Manufacturer-specific telegrams and process data 2

fp_2420_54_eng.vsd
Fig. 2-30
2421 – Manufacturer-specific telegrams and process data 3

| PZD1 | PZD2 | PZD3 | PZD4 | PZD5 | PZD6 | PZD7 | PZD8 | PZD9 | PZD10 | PZD11 | PZD12 | PZD13 | PZD14 | PZD15 | PZD16 | PZD17 | PZD18 | PZD19 | PZD20 | PZD21 | PZD22 | PZD23 | PZD24 | PZD25 | PZD26 | PZD27 | PZD28 | PZD29 | PZD30 | PZD31 | PZD32 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ZSW1_BM | STW1_BM | ZSW1 | STW1 | E_STW1 | E_ZSW1 | E_STW1_BM | E_ZSW1_BM | STW1_BM | ZSW1_BM | STW1 | ZSW1 | E_STW1 | E_ZSW1 | E_STW1_BM | E_ZSW1_BM | STW1_BM | ZSW1_BM | STW1 | ZSW1 | E_STW1 | E_ZSW1 | E_STW1_BM | E_ZSW1_BM | STW1_BM | ZSW1_BM | STW1 | ZSW1 | E_STW1 | E_ZSW1 | E_STW1_BM | E_ZSW1_BM |

**Function diagrams**

- **PROFIdrive**
- **Manufacturer-specific telegrams and process data 3**

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**Interconnection is made according to**

- **[2440]** [2450] automatically

**PD Telegram select**

- **p0922 (999)**

**Appl.-Class**

- **1**
- **3**
- **5**
- **7**
- **9**

**Function diagram**

- **fp_2421_54_eng.vsd**

**PROFIdrive sampling time**

Refer to [1020.7]

**DO:** **A_INF, B_INF, CU_G, CU_S, S_INF, SERVO, VECTOR**

**Function diagram**

- **Function diagrams**
- **PROFIdrive**

**PROFIdrive - Manufacturer-specific telegrams and process data 3**

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**<1>** Depending on the drive object, only specific telegrams can be used.

**<2>** If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].

**<3>** Freely interconn.

**<4>** The maximum number of PZD words depends on the drive object type.

**<5>** In order to comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1). p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFIdrive profile.

**<6>** Not for U/f control.

**<7>** Preassignment, not disabled.

**<8>** Only if the “Spindle” function module is active (r0108.11 = 1).

**<9>** Only for S120/150.

**<10>** Not for SERVO.
### Function Diagrams

#### PROFIdrive - Manufacturer-specific telegrams and process data

<table>
<thead>
<tr>
<th>Telegram</th>
<th>390</th>
<th>391</th>
<th>392</th>
<th>393</th>
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</table>

**Table Notes:***

1. Depending on the drive object, only specific telegrams can be used.
2. If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423]. If p0922 = 999 is changed to p0922 = 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
3. The maximum number of PZD words depends on the drive object type.
4. Only for CU_I_D410.
5. Connected Only for CU_S_AC or CU_I_D410.

---

**Notice:**

- DO: A_INF, B_INF, CU_G, CU_S, S_INF, SERVO, VECTOR
- Function diagram: fp_2422_54_eng.vsd
- PROFIdrive - Manufacturer-specific telegrams and process data 4
- 01.12.11 V04.05.00 S120/S150/G130/G150
<1> Depending on the drive object, only specific telegrams can be used.
<2> If p0922 = 999 is changed to another value, the telegram is automatically assigned as specified in [2415] - [2423].
If p0922 = 999 is changed to p0922 ≠ 999, the "old" telegram assignment is maintained as specified in [2415] - [2423].
<3> In order to comply with the PROFinet drive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1).
p2037 = 2 should be set if STW1 is not transferred with PZD1 as specified in the PROFinet drive profile.
<4> The maximum number of PZD words depends on the drive object type.

Refer to [1020.7]

PROFIdrive sampling time

<table>
<thead>
<tr>
<th>Telegram</th>
<th>901</th>
<th>902</th>
<th>999</th>
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<tbody>
<tr>
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<td>S_ZSW2</td>
<td>S_STW2</td>
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<tr>
<td>PZD2</td>
<td>S_SLS_LIMIT_A</td>
<td>S_SLS_LIMIT_ACTIVE</td>
<td>S_SLS_LIMIT_A</td>
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<td>PZD3</td>
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<td>S_CYCLE_COUNT</td>
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<td>PZD32</td>
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</table>

Fig. 2-32 - Manufacturer-specific/free telegrams and process data

S120/S150/G130/G150

PROFIdrive - Manufacturer-specific/free telegrams and process data

fp_2423_54_eng.vsd Function diagram

DO: A_INF, B_INF, CU_G, CU_S, S_INF, SERVO, VECTOR

22.11.11 V04.05.00 S120/S150/G130/G150
### Signal targets for STW1_BM

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>( g = \text{OFF (OFF1)} ) ( j = \text{ON} )</td>
<td>( p084[0] = r2090.0 )</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.1</td>
<td>( g = \text{OFF2 (immediate pulse suppression and switch on inhibit)} ) ( j = \text{No OFF2 (enable is possible)} )</td>
<td>( p084[0] = r2090.1 )</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.2</td>
<td>( g = \text{OFF3 (braking along the OFF3 ramp (p1135), then pulse suppression and switch on inhibit)} ) ( j = \text{No OFF3 (enable is possible)} )</td>
<td>( p084[0] = r2090.2 )</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.3</td>
<td>( g = \text{inhibit operation} ) ( j = \text{Enable operation} )</td>
<td>( p2816[0] = r2090.3 )</td>
<td>[2501.3]</td>
<td>[2634.3]</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.4</td>
<td>( g = \text{inhibit ramp-function generator} ) ( j = \text{Operating condition} )</td>
<td>( p1140[0] = r2090.4 )</td>
<td>[2501.3]</td>
<td>( [3060] )</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.5</td>
<td>( g = \text{Stop the ramp-function generator} ) ( j = \text{Enable the ramp-function generator} )</td>
<td>( p1141[0] = r2090.5 )</td>
<td>[2501.3]</td>
<td>( [3060] )</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.6</td>
<td>( g = \text{inhibit setpoint} ) ( j = \text{Enable setpoint} )</td>
<td>( p1142[0] = r2090.6 )</td>
<td>[2501.3]</td>
<td>( [3060] )</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.7</td>
<td>( g = \text{Acknowledge faults} )</td>
<td>( p2103[0] = r2090.7 )</td>
<td>[2546.1]</td>
<td>( [8060] )</td>
<td>(-)</td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
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<td>(-)</td>
<td>(-)</td>
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<td>STW1.9</td>
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<tr>
<td>STW1.10</td>
<td>( \text{1 = Control via PLC} )</td>
<td>( p0854[0] = r2090.10 )</td>
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<td>STW1.14</td>
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<td>STW1.15</td>
<td>Reserved</td>
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<td>(-)</td>
<td>(-)</td>
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</tbody>
</table>

**<1> Used in telegram 220**

**<2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).**

**<3> Interconnection is not disabled.**

---

**Signal targets for STW1_BM**

**Function diagram**

- **DO: SERVO, VECTOR**

**PROFIdrive - STW1_BM control word metal industry interconnection**

- **fp_2425_54_eng.vsd**

- **Function diagram**

- **S120/S150/G130/G150**

**SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A**

**SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A**
### Signal targets for STW2_BM

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>(Function diagram) internal control word</th>
<th>(Function diagram) signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW2.0</td>
<td>Command data set selection CDS, bit 0</td>
<td>p0810 = r2093.0</td>
<td>-</td>
<td>[8560]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.1</td>
<td>Command data set selection CDS, bit 1 &lt;3&gt;</td>
<td>p0811 = r2093.1</td>
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<td>[8560]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.2</td>
<td>Drive data set selection DDS, bit 0</td>
<td>p0820[0] = r2093.2 &lt;2&gt;</td>
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<td>[8565]</td>
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<tr>
<td>STW2.3</td>
<td>Drive data set selection DDS, bit 1</td>
<td>p0821[0] = r2093.3 &lt;2&gt;</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Drive data set selection DDS, bit 2</td>
<td>p0822[0] = r2093.4 &lt;2&gt;</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
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<tr>
<td>STW2.5</td>
<td>1 = Bypass ramp-function generator &lt;4&gt;</td>
<td>p1122[0] = r2093.5</td>
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</tr>
<tr>
<td>STW2.6</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.7</td>
<td>1 = Speed controller set integrator value</td>
<td>p1477[0] = r2093.7</td>
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<tr>
<td>STW2.8</td>
<td>1 = Droop enabled</td>
<td>p1492[0] = r2093.8</td>
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<td>[6030]</td>
<td>-</td>
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<tr>
<td>STW2.9</td>
<td>1 = Speed controller enabled</td>
<td>p0856[0] = r2093.9 &lt;2&gt;</td>
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<tr>
<td>STW2.10</td>
<td>Reserved</td>
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<tr>
<td>STW2.11</td>
<td>1 = Torque controlled operation</td>
<td>p1501[0] = r2093.11</td>
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<tr>
<td></td>
<td>0 = Speed controlled operation</td>
<td></td>
<td>-</td>
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<tr>
<td>STW2.12</td>
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<td>&lt;2&gt;</td>
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<td>STW2.13</td>
<td>Reserved</td>
<td>&lt;2&gt;</td>
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<td>STW2.14</td>
<td>Reserved</td>
<td>&lt;2&gt;</td>
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<td>-</td>
<td>-</td>
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<tr>
<td>STW2.15</td>
<td>Controller slave sign-of-life Toggle bit</td>
<td>p2081[15] = r2093.15</td>
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<1> Used in telegram 220.
<2> Interconnection is not disabled.
<3> Only for Vector.
<4> Only for "extended setpoint channel".
### Signal targets for E_STW1_BM

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>ON (close pre-charging/line contactor, pulses can be enabled) 0 = OFF1 (reduce Vdc along a ramp, suppress pulse and open pre-charging/line contactor)</td>
<td>p0840[0] = r2090.0</td>
<td>[8920.3] [8720.3] [8820.3] [8932] [8732] [8832]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible) 0 = OFF2 (inmediate pulse suppression and power-on inhibit)</td>
<td>p0844[0] = r2090.1</td>
<td>[8920.3] [8720.3] [8820.3] [8932] [8732] [8832]</td>
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<td>-</td>
</tr>
<tr>
<td>STW1.2</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled) 0 = Inhibit operation (suppress pulses)</td>
<td>p0852[0] = r2090.3</td>
<td>[8920.3] - [8820.3] [8932] - [8832]</td>
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<tr>
<td>STW1.4</td>
<td>Reserved</td>
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</tr>
<tr>
<td>STW1.5</td>
<td>1 = Infeed, inhibit motoring</td>
<td>p3532 = r2090.5</td>
<td>[8920.3] - - [8920] -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.6</td>
<td>1 = Infeed, inhibit regenerative operation</td>
<td>p3533 = r2090.6</td>
<td>[8920.3] - [8820.3] [8920] - [8820]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.7</td>
<td>Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.3] [2560]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>[8920.3] [8720.3] [8820.3] [8920] [8720]</td>
<td>-</td>
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</tr>
<tr>
<td>STW1.11</td>
<td>Reserved</td>
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<tr>
<td>STW1.12</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>STW1.13</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW1.14</td>
<td>Reserved</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>STW1.15</td>
<td>Controller-sign-of-life Toggle Bit</td>
<td>p2080[15] = r2090.15</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- **1** Used in telegram 371
- **2** STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
- **3** Only for A_INF, S_INF
- **4** Only for A_INF
- **5** B_INF and S_INF only for S120.
- **6** Interconnection is not disabled.
- **7** Only for S120 and G150.
- **8** Not for G130.
## Signal sources for ZSW1_BM

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal status word</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>= Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>= Ready for operation</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>= Operation enabled</td>
<td>p2080[2] = r2811.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>= Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>= No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>= No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>= Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>= Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>= Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>= Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>= f o r n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>= L, M, or P limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2522.7]</td>
<td>[5610] [8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>= Open the holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>[2503.7]</td>
<td>[2701]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

1. Used in telegram 220.
2. The ZSW1 is generated using the binector-connector converter (Bi: p2080[0...15], inversion: p2088[0...p2088[0...15])
3. The drive object is ready to accept data.
5. Only for SINAMICS S120.
6. Interconnection is not disabled.
7. Reserved

**Signal table**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Parameters</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>= Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>= Ready for operation</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>= Operation enabled</td>
<td>p2080[2] = r2811.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>= Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>= No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>= No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>= Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>[2610]</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>= Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>= Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td>[8010]</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>= Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>= f o r n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>= L, M, or P limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2522.7]</td>
<td>[5610] [8060]</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>= Open the holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>[2503.7]</td>
<td>[2701]</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Function diagrams**

- [Function diagram Internal status word](#)
- [Function diagram signal source](#)

**Signal table**

- **Signal**: Name of the signal
- **Meaning**: Description of the signal's function
- **Parameters**: Parameters associated with the signal
- **Function diagram**: Diagram associated with the signal
- **Inverted**: Indicates if the signal is inverted

**Signal codes**

- **ZSW1.0**: Ready for switching on
- **ZSW1.1**: Ready for operation
- **ZSW1.2**: Operation enabled
- **ZSW1.3**: Fault present
- **ZSW1.4**: No coast down active (OFF2 inactive)
- **ZSW1.5**: No fast stop active (OFF3 inactive)
- **ZSW1.6**: Switching on inhibited active
- **ZSW1.7**: Alarm present
- **ZSW1.8**: Speed setpoint - actual value deviation within tolerance t_off
- **ZSW1.9**: Control requested
- **ZSW1.10**: f o r n comparison value reached/exceeded
- **ZSW1.11**: L, M, or P limit not reached
- **ZSW1.12**: Open the holding brake
- **ZSW1.13**: Reserved
- **ZSW1.14**: Reserved
- **ZSW1.15**: Reserved

**Table notes**

- **<1>** Used in telegram 220.
- **<2>** The ZSW1 is generated using the binector-connector converter (Bi: p2080[0...15], inversion: p2088[0...p2088[0...15])
- **<3>** The drive object is ready to accept data.
- **<4>** Not for VECTOR U/f.
- **<5>** Only for SINAMICS S120.
- **<6>** Interconnection is not disabled.
### Signal sources for ZSW2_BM

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal status word</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW2.0</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.1</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.2</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.3</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.4</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.5</td>
<td>1 = Alarm class bit 0</td>
<td>p2081[5] = r2139.11</td>
<td>-</td>
<td>[2548]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.6</td>
<td>1 = Alarm class bit 1</td>
<td>p2081[6] = r2139.12</td>
<td>-</td>
<td>[2548]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.7</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.9</td>
<td>1 = Speed setpoint limited</td>
<td>p2081[9] = r1407.11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.10</td>
<td>1 = Upper torque limit</td>
<td>p2081[10] = r1407.8</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.11</td>
<td>1 = Lower torque limit</td>
<td>p2081[11] = r1407.9</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.12</td>
<td>1 = Encoderless operation due to fault</td>
<td>p2081[12] = r1407.13</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.13</td>
<td>1 = SS1 delay time active in the drive</td>
<td>p2081[13] = r9773.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.14</td>
<td>1 = STO active in drive</td>
<td>p2081[14] = r9773.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.15</td>
<td>Controller slave sign-of-life Toggle bit</td>
<td>p2081[15] = r2093.15</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- <1> Used in telegram 220.
- <2> Not for VECTOR U/f.
- <3> Interconnection is not disabled.

**DO: SERVO, VECTOR**

PROFIdrive - ZSW2_BM status word metal industry interconnection
# Signal sources for E_ZSW1_BM

## Signal Table

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] signal source</th>
<th>[Function diagram] internal status word</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>A_INF</td>
<td>B_INF</td>
<td>S_INF</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation</td>
<td>p2080[1] = r0899.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled</td>
<td>p2080[2] = r0899.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No OFF2 effective</td>
<td>p2080[4] = r0899.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited</td>
<td>p2080[6] = r0899.6</td>
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</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = PLC requests control</td>
<td>p2080[9] = r0899.9</td>
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</tr>
<tr>
<td>ZSW1.10</td>
<td>Reserved</td>
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<tr>
<td>ZSW1.11</td>
<td>1 = Pre-charging completed</td>
<td>p2080[11] = r0899.11</td>
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</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Line contactor closed</td>
<td>p2080[12] = r0899.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>Reserved</td>
<td></td>
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</tr>
<tr>
<td>ZSW1.14</td>
<td>Reserved</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>Controller sign-of-life Toggle bit</td>
<td>r2080[15] = r2090.15</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Signal Meanings

- **1**: Used in telegram 371.
- **<1>**: Only for S120 and G150.
- **<2>**: Not for G130.
- **<3>**: Only for S120.
- **<4>**: Interconnection is not disabled.

---

**Signal sources for E_ZSW1_BM**

**Signal**

- **ZSW1.0**: 1 = Ready for switching on
- **ZSW1.1**: 1 = Ready for operation
- **ZSW1.2**: 1 = Operation enabled
- **ZSW1.3**: 1 = Fault present
- **ZSW1.4**: 1 = No OFF2 effective
- **ZSW1.5**: Reserved
- **ZSW1.6**: 1 = Switching on inhibited
- **ZSW1.7**: 1 = Alarm present
- **ZSW1.8**: Reserved
- **ZSW1.9**: 1 = PLC requests control
- **ZSW1.10**: Reserved
- **ZSW1.11**: 1 = Pre-charging completed
- **ZSW1.12**: 1 = Line contactor closed
- **ZSW1.13**: Reserved
- **ZSW1.14**: Reserved
- **ZSW1.15**: Controller sign-of-life Toggle bit

**Meaning**

- **1**: Ready for switching on
- **<1>**: Ready for operation
- **<2>**: Operation enabled
- **<3>**: Fault present
- **<4>**: No OFF2 effective
- **<5>**: Switching on inhibited
- **<6>**: Alarm present
- **<7>**: Reserved
- **<8>**: PLC requests control
- **<9>**: Pre-charging completed
- **<10>**: Line contactor closed
- **<11>**: Reserved
- **<12>**: Reserved
- **<13>**: Controller sign-of-life Toggle bit

**Interconnection Parameters**

- **A_INF**: Refer to [1020.7]
- **B_INF**: Refer to [1030.7]
- **S_INF**: Refer to [1040.7]
### Signal receivers for PZD receive signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>PROFIdrive Signal No.</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1</td>
<td>Control word 1</td>
<td>1</td>
<td>(bitwise)</td>
<td>[2442][2443]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>STW2</td>
<td>Control word 2</td>
<td>3</td>
<td>(bitwise)</td>
<td>[2444]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>NSOLL_A</td>
<td>Speed setpoint A (16-bit)</td>
<td>5</td>
<td>p1070 (Erw. Soll.)</td>
<td>[3030.2]</td>
<td>I16</td>
<td>4000 hex 2 p2000</td>
</tr>
<tr>
<td>NSOLL_B</td>
<td>Speed setpoint B (32-bit)</td>
<td>7</td>
<td>p1070 (Erw. Soll.)</td>
<td>[3030.2]</td>
<td>I32</td>
<td>4000 0000 hex 2 p2000</td>
</tr>
<tr>
<td>G1_STW</td>
<td>Encoder 1 control word</td>
<td>9</td>
<td>p0480[0]</td>
<td>[4720]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>G2_STW</td>
<td>Encoder 2 control word</td>
<td>13</td>
<td>p0480[1]</td>
<td>[4720]</td>
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<td>25</td>
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<td>KPC</td>
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<td>MDI_TARPOS</td>
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<td>1 hex 2 1 LU</td>
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<td>MDI_VELOCITY</td>
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<td>1 hex 2 1000 LU/min</td>
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<tr>
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**<1>** When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS0 are automatically set.

**<2>** Data type according to to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.

**<3>** Only for SINAMICS S120.

**<4>** Only for ENCODER.

---

**Signal receivers for PZD receive signals**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>PROFIdrive Signal No.</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</th>
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<tr>
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<td>MDI position</td>
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<td>Control word 2 ENCODER</td>
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**<1>** When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS0 are automatically set.

**<2>** Data type according to to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.

**<3>** Only for SINAMICS S120.

**<4>** Only for ENCODER.
### Signal receivers for PZD receive signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>PROFIdrive Signal No.</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</th>
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<td>p1513[0]</td>
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<td>MT_STW</td>
<td>Measuring probe control word</td>
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<1> When selecting a standard telegram or a manufacturer-specific telegram via p0922, these interconnection parameters of the command data set CDS0 are automatically set.

<2> Data type according to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.

<3> Only for S120.

<4> Only for S120/S150.
Fig. 2-41  2441 – STW1 control word interconnection (p2038 = 2)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
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<tbody>
<tr>
<td>STW1.0</td>
<td>ON (pulses can be enabled)</td>
<td>p0840[0] = r2090.0</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF1 (braking with ramp-function generator, then pulse suppression &amp; ready for switching on)</td>
<td></td>
<td></td>
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<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible)</td>
<td>p0844[0] = r2090.1</td>
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<td>0 = OFF2 (immediate pulse suppression and switching on inhibited)</td>
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<tr>
<td>STW1.2</td>
<td>1 = No OFF3 (enable possible)</td>
<td>p0848[0] = r2090.2</td>
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<td>0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)</td>
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<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled)</td>
<td>p0852[0] = r2090.3</td>
<td>[2501.3]</td>
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<td></td>
<td>0 = Inhibit operation (suppress pulses)</td>
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<td>STW1.4</td>
<td>1 = Operating condition (the ramp-function generator can be enabled)</td>
<td>p1140[0] = r2090.4</td>
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<td>[3060] [3070] [3080]</td>
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<tr>
<td></td>
<td>0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)</td>
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<td>STW1.5</td>
<td>1 = Enable the ramp-function generator</td>
<td>p1141[0] = r2090.5</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
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<tr>
<td></td>
<td>0 = Stop the ramp-function generator (freeze the ramp-function generator output)</td>
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<tr>
<td>STW1.6</td>
<td>1 = Enable setpoint</td>
<td>p1142[0] = r2090.6</td>
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<tr>
<td></td>
<td>0 = Inhibit setpoint (set the ramp-function generator input to zero)</td>
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<td>STW1.7</td>
<td>i = Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.1]</td>
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<td>STW1.8</td>
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<td>STW1.9</td>
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<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>[2501.3]</td>
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<tr>
<td>STW1.11</td>
<td>1 = Direction reversal</td>
<td>p1113[0] = r2090.11</td>
<td>[2505.3]</td>
<td>[3040]</td>
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<tr>
<td>STW1.12</td>
<td>1 = Unconditionally open the holding brake</td>
<td>p0855[0] = r2090.12</td>
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<td>STW1.13</td>
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<td>STW1.14</td>
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<td>STW1.15</td>
<td>1 = Command Data Set selection CDS bit 0</td>
<td>p0810[0] = r2090.15</td>
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<1> Used in telegram 20.
<2> STW1.10 must be set to ensure that the drive object accepts the process data (P2D).
<3> OC = Operating condition.
<4> Interconnection is not disabled.
Signal targets for STW1 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>1 = ON (pulses can be enabled)</td>
<td>p0840[0] = r2090.0</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF1 (braking with ramp-function generator, then pulse suppression &amp; ready for switching on)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible)</td>
<td>p0844[0] = r2090.1</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF2 (immediate pulse suppression and switching on inhibited)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.2</td>
<td>1 = No OFF3 (enable possible)</td>
<td>p0848[0] = r2090.2</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = OFF3 (braking with the OFF3 ramp p1135, then pulse suppression and switching on inhibited)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled)</td>
<td>p0852[0] = r2090.3</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit operation (suppress pulses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.4</td>
<td>1 = Operating condition (the ramp-function generator can be enabled)</td>
<td>p1140[0] = r2090.4</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit ramp-function generator (set the ramp-function generator output to zero)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.5</td>
<td>1 = Continue ramp-function generator</td>
<td>p1141[0] = r2090.5</td>
<td>[2501.3]</td>
<td>[3060] [3070]</td>
<td>-</td>
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<tr>
<td></td>
<td>0 = Freeze ramp-function generator (freeze the ramp-function generator output)</td>
<td></td>
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<tr>
<td>STW1.6</td>
<td>1 = Enable setpoint</td>
<td>p1142[0] = r2090.6</td>
<td>[2501.3]</td>
<td>[3060] [3070] [3080]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit setpoint (set the ramp-function generator input to zero)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.7</td>
<td>1 = 1. Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>[2546.1]</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>[2501.3]</td>
<td>[2501]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.11</td>
<td>1 = Setpoint inversion</td>
<td>p1113[0] = r2090.11</td>
<td>[2505.3]</td>
<td>[3040]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.12</td>
<td>1 = Unconditionally open the holding brake</td>
<td>p0855[0] = r2090.12</td>
<td>[2501.3]</td>
<td>[2701]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.13</td>
<td>1 = Motorized potentiometer setpoint raise</td>
<td>p1035[0] = r2090.13</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td>-</td>
</tr>
<tr>
<td>STW1.14</td>
<td>1 = Motorized potentiometer setpoint lower</td>
<td>p1036[0] = r2090.14</td>
<td>[2505.3]</td>
<td>[3020]</td>
<td>-</td>
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<tr>
<td>STW1.15</td>
<td>Reserved</td>
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</table>

<1> Used in telegrams 1, 2, 3, 4, 5, 6, 352.

<2> STW1.10 must be set to ensure that the drive object accepts the process data (P2D).

<3> Only for "expanded setpoint channel" and "extended ramp-function generator".

<4> OC = Operating condition.

<5> Only for SINAMICS S120.
### Signal targets for STW2 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW2.0</td>
<td>Drive data set selection DDS, bit 0</td>
<td>p0820[0] = r2093.0</td>
<td></td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.1</td>
<td>Drive data set selection DDS, bit 1</td>
<td>p0821[0] = r2093.1</td>
<td></td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.2</td>
<td>Drive data set selection DDS, bit 2</td>
<td>p0822[0] = r2093.2</td>
<td></td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.3</td>
<td>Drive data set selection DDS, bit 3</td>
<td>p0823[0] = r2093.3</td>
<td></td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Drive data set selection DDS, bit 4</td>
<td>p0824[0] = r2093.4</td>
<td></td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.5</td>
<td>Reserved</td>
<td></td>
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<td>-</td>
</tr>
<tr>
<td>STW2.6</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW2.7</td>
<td>1 = Parking axis</td>
<td>p0897 = r2093.7</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW2.8</td>
<td>1 = Traverse to fixed endstop</td>
<td>p1545[0] = r2093.8</td>
<td>[2520.2]</td>
<td>[8012]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.9</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW2.10</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW2.11</td>
<td>1 = Motor changeover, feedback Signal</td>
<td>p0828[0] = r2093.11</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>STW2.12</td>
<td>Master sign-of-life, bit 0</td>
<td></td>
<td></td>
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<td>-</td>
</tr>
<tr>
<td>STW2.13</td>
<td>Master sign-of-life, bit 1</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>STW2.14</td>
<td>Master sign-of-life, bit 2</td>
<td></td>
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<td>-</td>
</tr>
<tr>
<td>STW2.15</td>
<td>Master sign-of-life, bit 3</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

- **<1>** Used in telegrams 2, 3, 4, 5, 6, 9, 10 and 111.
- **<2>** Not for telegrams 9, 110 and 111.
- **<3>** Only for SINAMICS S120.
- **<4>** Only for telegram 9.
- **<5>** Not for Vector U/f.

---

**Signal targets for STW2 in Interface Mode SINAMICS (p2038 = 0)**

- **Signal**
  - STW2.0
  - STW2.1
  - STW2.2
  - STW2.3
  - STW2.4
  - STW2.5
  - STW2.6
  - STW2.7
  - STW2.8
  - STW2.9
  - STW2.10
  - STW2.11
  - STW2.12
  - STW2.13
  - STW2.14
  - STW2.15

- **Meaning**
  - Drive data set selection DDS, bit 0
  - Drive data set selection DDS, bit 1
  - Drive data set selection DDS, bit 2
  - Drive data set selection DDS, bit 3
  - Drive data set selection DDS, bit 4
  - Reserved
  - Reserved
  - 1 = Parking axis
  - 1 = Traverse to fixed endstop
  - Reserved
  - Reserved
  - 1 = Motor changeover, feedback Signal
  - Master sign-of-life, bit 0
  - Master sign-of-life, bit 1
  - Master sign-of-life, bit 2
  - Master sign-of-life, bit 3

- **Interconnection parameters**
  - p0820[0] = r2093.0
  - p0821[0] = r2093.1
  - p0822[0] = r2093.2
  - p0823[0] = r2093.3
  - p0824[0] = r2093.4
  - p0897 = r2093.7
  - p1545[0] = r2093.8
  - p2045 = r2050[3]
  - p0828[0] = r2093.11

- **Function diagram signal target**
  - [8565]
  - [8565]
  - [8565]
  - [8565]
  - [8565]
  - [8565]
  - [2520.2]
  - [2410]
  - [8012]

- **Inverted**
  - -
  - -
  - -
  - -
  - -
  - -
  - -
  - -
  - -

---

**Table of Interconnection Parameters**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW2.0</td>
<td>Drive data set selection DDS, bit 0</td>
<td>p0820[0] = r2093.0</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.1</td>
<td>Drive data set selection DDS, bit 1</td>
<td>p0821[0] = r2093.1</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.2</td>
<td>Drive data set selection DDS, bit 2</td>
<td>p0822[0] = r2093.2</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.3</td>
<td>Drive data set selection DDS, bit 3</td>
<td>p0823[0] = r2093.3</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Drive data set selection DDS, bit 4</td>
<td>p0824[0] = r2093.4</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.5</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.6</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.7</td>
<td>1 = Parking axis</td>
<td>p0897 = r2093.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.8</td>
<td>1 = Traverse to fixed endstop</td>
<td>p1545[0] = r2093.8</td>
<td>[2520.2]</td>
<td>[8012]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.9</td>
<td>Reserved</td>
<td></td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.10</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.11</td>
<td>1 = Motor changeover, feedback Signal</td>
<td>p0828[0] = r2093.11</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.12</td>
<td>Master sign-of-life, bit 0</td>
<td></td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>STW2.13</td>
<td>Master sign-of-life, bit 1</td>
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</tr>
<tr>
<td>STW2.14</td>
<td>Master sign-of-life, bit 2</td>
<td></td>
<td>-</td>
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</tr>
<tr>
<td>STW2.15</td>
<td>Master sign-of-life, bit 3</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes**

- **<1>** Used in telegrams 2, 3, 4, 5, 6, 9, 10 and 111.
- **<2>** Not for telegrams 9, 110 and 111.
- **<3>** Only for SINAMICS S120.
- **<4>** Only for telegram 9.
- **<5>** Not for Vector U/f.
### Signal targets for E_STW1

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>Function diagram internal control word</th>
<th>Function diagram signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>ON (close pre-charge/line contactor, pulses can be enabled)</td>
<td>p0840[0] = r2090.0</td>
<td>A_INF</td>
<td>B_INF&lt;l&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td></td>
<td>0 = OFF1 (reduce Vdc along a ramp, suppress pulse and open pre-charge/line contactor)</td>
<td></td>
<td>[8920.3]</td>
<td>[8720.3]</td>
<td>[8820.3]</td>
</tr>
<tr>
<td>STW1.1</td>
<td>1 = No OFF2 (enable is possible)</td>
<td>p0844[0] = r2090.1</td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td></td>
<td>0 = OFF2 (immediate pulse suppression and switching on inhibited)</td>
<td></td>
<td>[8920.3]</td>
<td>[8720.3]</td>
<td>[8820.3]</td>
</tr>
<tr>
<td>STW1.2</td>
<td>Reserved</td>
<td></td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td>STW1.3</td>
<td>1 = Enable operation (pulses can be enabled)</td>
<td>p0852[0] = r2090.3</td>
<td>A_INF</td>
<td>B_INF&lt;l&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td></td>
<td>0 = Inhibit operation (suppress pulses)</td>
<td></td>
<td>[8920.3]</td>
<td>[8720.3]</td>
<td>[8820.3]</td>
</tr>
<tr>
<td>STW1.4</td>
<td>Reserved</td>
<td></td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td>STW1.5</td>
<td>1 = Infeed, inhibit motoring operation</td>
<td>p3532 = r2090.5</td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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<td>[8920.3]</td>
<td>[8720.3]</td>
<td>[8820.3]</td>
</tr>
<tr>
<td>STW1.6</td>
<td>1 = Infeed, inhibit regenerative operation</td>
<td>p3533 = r2090.6</td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>[8920.3]</td>
<td>[8720.3]</td>
<td>[8820.3]</td>
</tr>
<tr>
<td>STW1.7</td>
<td>1 = Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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<td></td>
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<td></td>
<td>[2546.3]</td>
<td>[8060]</td>
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<td>STW1.8</td>
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<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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<td>STW1.9</td>
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<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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<tr>
<td>STW1.10</td>
<td>1 = Control via PLC</td>
<td>p0854[0] = r2090.10</td>
<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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<td>[8920.3]</td>
<td>[8720.3]</td>
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<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
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<td>STW1.12</td>
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<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
</tr>
<tr>
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<td>S_INF&lt;u&gt;</td>
</tr>
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<td>A_INF</td>
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<td>A_INF</td>
<td>B_INF&lt;u&gt;</td>
<td>S_INF&lt;u&gt;</td>
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- <1> Used in telegram 370.
- <2> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
- <3> Only for A_INF, S_INF
- <4> Only for A_INF
- <5> B_INF and S_INF only for S120.
- <6> Only for S130 and G150
- <7> Not for G130.
### Signal sources for PZD send signals

#### Signal No. | Description | Function diagram | Data type | Scaling |
<table>
<thead>
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<tbody>
<tr>
<td>2</td>
<td>Status word 1</td>
<td>[2452][2453][2479]</td>
<td>U16</td>
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<tr>
<td>4</td>
<td>Status word 2</td>
<td>[2454][2455]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>6</td>
<td>Speed setpoint A (16 bit)</td>
<td>[24710]</td>
<td>I16</td>
<td>4000 hex ^p2000</td>
</tr>
<tr>
<td>8</td>
<td>Speed setpoint B (32 bit)</td>
<td>[24710]</td>
<td>I32</td>
<td>4000 0000 hex ^p2000</td>
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<tr>
<td>10</td>
<td>Encoder 1 status word</td>
<td>[4730]</td>
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<td>11</td>
<td>Encoder 1 actual position 1</td>
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<td>Encoder 1 actual position 2</td>
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<td>14</td>
<td>Encoder 2 status word</td>
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<td>Encoder 2 actual position 1</td>
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<td>Encoder 2 actual position 2</td>
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<td>18</td>
<td>Encoder 3 status word</td>
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<td>19</td>
<td>Encoder 3 actual position 1</td>
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<td>21</td>
<td>Digital inputs</td>
<td>[2459]</td>
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<td>23</td>
<td>Analog inputs</td>
<td>[p2051][20]</td>
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<td>28</td>
<td>Position actual value A</td>
<td>[4010]</td>
<td>I32</td>
<td>1 hex § 1 LU</td>
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<td>33</td>
<td>Pos selected block</td>
<td>[3650]</td>
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<tr>
<td>51</td>
<td>Absolute actual current, smoothed</td>
<td>[6714]</td>
<td>I16</td>
<td>4000 hex ^p2002</td>
</tr>
<tr>
<td>52</td>
<td>Current actual value, torque-generating</td>
<td>[6714]</td>
<td>I16</td>
<td>4000 hex ^p2002</td>
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<td>53</td>
<td>Actual torque smoothed</td>
<td>[6714]</td>
<td>I16</td>
<td>4000 hex ^p2003</td>
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<td>54</td>
<td>Power factor, smoothed</td>
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<td>I16</td>
<td>4000 hex ^p2004</td>
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<td>57</td>
<td>Actual speed, smoothed</td>
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<td>I16</td>
<td>4000 hex ^p2000</td>
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<tr>
<td>58</td>
<td>VIK-NAMUR message bit bar</td>
<td>[3113]</td>
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<td>U16</td>
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<tr>
<td>59</td>
<td>Absolute actual current</td>
<td>[6714]</td>
<td>I16</td>
<td>4000 hex ^p2002</td>
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<td>60</td>
<td>Actual torque</td>
<td>[6714]</td>
<td>I16</td>
<td>4000 hex ^p2003</td>
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</tbody>
</table>

**Scaling**

- 4000 hex: p2000
- 4000 0000 hex: p2000
- 4000: p2000
- 4000: p2003
- 4000: p2000

---

<1> Data type according to the PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.

<2> Only for SINAMICS S120.

<3> Only for ENCODER.
### Signal sources for PZD send signals

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>PROFIdrive Signal No.</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Data type</th>
<th>Scaling</th>
</tr>
</thead>
<tbody>
<tr>
<td>MELDW</td>
<td>Message word</td>
<td>102</td>
<td>r2089[2]</td>
<td>[246]</td>
<td>U16</td>
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</tr>
<tr>
<td>MSOLL_GTALT</td>
<td>Total speed setpoint smoothed</td>
<td>120</td>
<td>r079[1]</td>
<td>[5610]</td>
<td>I16</td>
<td>4000 hex</td>
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<tr>
<td>A1T_GTALT</td>
<td>Torque utilization smoothed</td>
<td>121</td>
<td>r081</td>
<td>[8032]</td>
<td>I16</td>
<td>4000 hex</td>
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<tr>
<td>MT_ZSW</td>
<td>Measuring probe status word</td>
<td>131</td>
<td>r0686</td>
<td>-</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>MT_ZS_F</td>
<td>Measuring probe 1 measuring time falling edge</td>
<td>132</td>
<td>r0686[1]</td>
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<td>U16</td>
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<tr>
<td>MT1_ZS_S</td>
<td>Measuring probe 1 measuring time rising edge</td>
<td>133</td>
<td>r0686[0]</td>
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<td>U16</td>
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<td>MT2_ZS_F</td>
<td>Measuring probe 2 measuring time falling edge</td>
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<tr>
<td>MT2_ZS_S</td>
<td>Measuring probe 2 measuring time rising edge</td>
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<td>MT3_ZS_F</td>
<td>Measuring probe 3 measuring time falling edge</td>
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<tr>
<td>MT3_ZS_S</td>
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<td>MT4_ZS_F</td>
<td>Measuring probe 4 measuring time falling edge</td>
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<td>MT4_ZS_S</td>
<td>Measuring probe 4 measuring time rising edge</td>
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<td>MT5_ZS_F</td>
<td>Measuring probe 5 measuring time falling edge</td>
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<td>MT5_ZS_S</td>
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<td>MT6_ZS_F</td>
<td>Measuring probe 6 measuring time falling edge</td>
<td>142</td>
<td>r0687[5]</td>
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<td>MT6_ZS_S</td>
<td>Measuring probe 6 measuring time rising edge</td>
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<td>MT7_ZS_F</td>
<td>Measuring probe 7 measuring time falling edge</td>
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<td>r0687[6]</td>
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<tr>
<td>MT7_ZS_S</td>
<td>Measuring probe 7 measuring time rising edge</td>
<td>145</td>
<td>r0686[6]</td>
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<td>U16</td>
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<tr>
<td>MT8_ZS_F</td>
<td>Measuring probe 8 measuring time falling edge</td>
<td>146</td>
<td>r0687[7]</td>
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<td>U16</td>
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<tr>
<td>MT8_ZS_S</td>
<td>Measuring probe 8 measuring time rising edge</td>
<td>147</td>
<td>r0688[1]</td>
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<tr>
<td>MT_DIAG</td>
<td>Measuring probe (stage 3) diagnostics word</td>
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<td>MT_ZS1</td>
<td>Measuring probe (stage 3) measuring time 1</td>
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<td>r0686[0]</td>
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<td>MT_ZS16</td>
<td>Measuring probe (Stage 3) measuring time 16</td>
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<tr>
<td>MT_ZS1B</td>
<td>Measuring probe (Stage 3) measuring timebezug 1</td>
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<tr>
<td>MT_ZS2B</td>
<td>Measuring probe (Stage 3) measuring timebezug 2</td>
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<tr>
<td>MT_ZS3B</td>
<td>Measuring probe (Stage 3) measuring timebezug 3</td>
<td>167</td>
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<tr>
<td>MT_ZS4B</td>
<td>Measuring probe (Stage 3) measuring timebezug 4</td>
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<tr>
<td>POS_ZSW</td>
<td>Pos status word</td>
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<td>r2089</td>
<td>[2445]</td>
<td>U16</td>
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<tr>
<td>POS_ZSW1</td>
<td>Pos status word 1</td>
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<td>r2089[3]</td>
<td>[2446]</td>
<td>U16</td>
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<tr>
<td>POS_ZSW2</td>
<td>Pos status word 2</td>
<td>223</td>
<td>r2089[4]</td>
<td>[2447]</td>
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<tr>
<td>FAULT_CODE</td>
<td>Fault code</td>
<td>301</td>
<td>r2132</td>
<td>[8000]</td>
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<td>WARN_CODE</td>
<td>Alarm code</td>
<td>303</td>
<td>r2132</td>
<td>[8005]</td>
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<td>E_DIGITAL_1</td>
<td>Digital input (16 Bit)</td>
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<td>[2500]</td>
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<tr>
<td>E_ZSW1</td>
<td>Status word 1 for Active Infeed</td>
<td>321</td>
<td>r2089[1]</td>
<td>[2457]</td>
<td>U16</td>
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</tr>
<tr>
<td>ZSW1_BM</td>
<td>Status word 1, variant for BM</td>
<td>323</td>
<td>r2089[0]</td>
<td>[2428]</td>
<td>U16</td>
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</tr>
<tr>
<td>ZSW2_BM</td>
<td>Status word 2, variant for BM</td>
<td>325</td>
<td>r2089[1]</td>
<td>[2429]</td>
<td>U16</td>
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<tr>
<td>E_ZSW1_BM</td>
<td>Status word 1 for Infeed, variant for BM (ALM, BLM, SLM)</td>
<td>327</td>
<td>r2089</td>
<td>[2430]</td>
<td>U16</td>
<td>-</td>
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<tr>
<td>CU_ZSW1</td>
<td>Status word 1 for Control Unit</td>
<td>501</td>
<td>r2089[1]</td>
<td>[2496]</td>
<td>U16</td>
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### Data type according to the PROFIdrive profile:
- I16 = Integer16
- I32 = Integer32
- U16 = Unsigned16
- U32 = Unsigned32

### Only for SINAMICS S120.
### Signal sources for ZSW1 in Interface Mode VIK-NAMUR (p2038 = 2)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] Internal status word</th>
<th>[Function diagram] Signal source</th>
<th>Inverted &lt;2&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation (DC link loaded, pulses inhibited)</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled (drive follows n_set)</td>
<td>p2080[2] = r0899.2</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
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</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Power-on inhibit active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = I, M, or P limit not reached</td>
<td>p2080[11] = r0056.13</td>
<td>[2522.7]</td>
<td>[6060]</td>
<td>✓</td>
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<td>ZSW1.12</td>
<td>Reserved</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No motor overtemperature alarm</td>
<td>p2080[13] = r2135.14</td>
<td>[2548.7]</td>
<td>[8016]</td>
<td>✓</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_act ≥ 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.7]</td>
<td>[8010]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>1 = Command Data Set selection CDS bit 0</td>
<td>p2080[15] = r0836.0</td>
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<td>-</td>
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</tbody>
</table>

<1> Used in telegram 20.
<2> The ZSW1 is generated using the binector-connector converter (Bi: p2080[0...15], inversion: p2088[0...p2088[0].15)
<3> The drive object is ready to accept data.
<4> Interconnection is not disabled.

**Signal**

1 = Ready for switching on
1 = Ready for operation (DC link loaded, pulses inhibited)
1 = Operation enabled (drive follows n_set)
1 = Fault present
1 = No coast down active (OFF2 inactive)
1 = No fast stop active (OFF3 inactive)
1 = Power-on inhibit active
1 = Alarm present
1 = Speed setpoint - actual value deviation within tolerance t_off
1 = Control requested
1 = f or n comparison value reached/exceeded
1 = I, M, or P limit not reached
1 = No motor overtemperature alarm
1 = Motor rotates forwards (n_act ≥ 0)
1 = Motor rotates backwards (n_act < 0)
1 = Command Data Set selection CDS bit 0

**Signal source**

- Refer to \[1020.7\]
### Signal sources for ZSW1 im Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] Internal status word</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation</td>
<td>p2080[1] = r0899.1</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled</td>
<td>p2080[2] = r0899.2</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2193.3</td>
<td>[2548.7]</td>
<td>[8060]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coast down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No fast stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2503.7]</td>
<td>[2610]</td>
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</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2197.7</td>
<td>[2548.7]</td>
<td>[8065]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance t_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.7]</td>
<td>[8010]</td>
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<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[9] = r0899.9</td>
<td>[2503.7]</td>
<td>[2503]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached/exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2536.7]</td>
<td>[8010]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = I, M, or P limit reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2522.7]</td>
<td>[5010][8060]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Open the holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>[2503.7]</td>
<td>[2701]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No motor overtemperature alarm</td>
<td>p2080[13] = r2135.14</td>
<td>[2548.7]</td>
<td>[8016]</td>
<td>✔</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_act &gt; 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.7]</td>
<td>[8010]</td>
<td></td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>1 = Motor rotates backwards (n_act &lt; 0)</td>
<td>p2080[15] = r2135.15</td>
<td>[2548.7]</td>
<td>[8014]</td>
<td>✔</td>
</tr>
</tbody>
</table>

<1> Used in telegrams 1, 2, 3, 4, 5, 6, 7, 8, 352.
<2> The ZSW1 is generated using the binector-connector converter (BI: p2080[0...15], inversion: p2080[0...p2088[0..15])
<3> The drive object is ready to accept data.
<4> Not for VECTOR U/f.
<5> Only for SINAMICS S120.
<6> The drive object is ready to accept data.
### Signal sources for ZSW2 in Interface Mode SINAMICS (p2038 = 0)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal status word</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW2.0</td>
<td>1 = Drive data set DDS effective, bit 0</td>
<td>p2081[0] = r0051.0</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.1</td>
<td>1 = Drive data set DDS effective, bit 1</td>
<td>p2081[1] = r0051.1</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.2</td>
<td>1 = Drive data set DDS effective, bit 2</td>
<td>p2081[2] = r0051.2</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.3</td>
<td>1 = Drive data set DDS effective, bit 3</td>
<td>p2081[3] = r0051.3</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.4</td>
<td>1 = Drive data set DDS effective, bit 4</td>
<td>p2081[4] = r0051.4</td>
<td>-</td>
<td>[8565]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.5</td>
<td>1 = Alarm class bit 0</td>
<td>p2081[5] = r2139.11</td>
<td>-</td>
<td>[2548]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.6</td>
<td>1 = Alarm class bit 1</td>
<td>p2081[6] = r2139.12</td>
<td>-</td>
<td>[2548]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.7</td>
<td>1 = Parking axis active</td>
<td>p2081[7] = r0896.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.8</td>
<td>1 = Traverse to fixed endstop</td>
<td>p2081[8] = r1406.8</td>
<td>-</td>
<td>[2520]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.9</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.10</td>
<td>1 = Pulses enabled</td>
<td>p2082[13] = r0899.11</td>
<td>[2503.7]</td>
<td>[2610]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.11</td>
<td>1 = Motor data set changeover active</td>
<td>p2081[11] = r0835.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.12</td>
<td>Slave sign-of-life bit 0</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.13</td>
<td>Slave sign-of-life bit 1</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.14</td>
<td>Slave sign-of-life bit 2</td>
<td></td>
<td>Implicitly interconnected</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.15</td>
<td>Slave sign-of-life bit 3</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Notes:**
- **<1>** Used in telegrams 2, 3, 4, 5, 6, 9, 10, 11, 13.
- **<2>** These signals are automatically interconnected for clock-cycle synchronous operation.
- **<3>** Only for SINAMICS S120.
- **<4>** Not for Vector U/f.

**Refer to [1020.7]**

**PROFdrive - ZSW2 status word interconnection (p2038 = 0)**

**Function diagram:**
- 2454 -

**PROFdrive sampling time:**
- 2454 -

**Signal sources for ZSW2 in Interface Mode SINAMICS (p2038 = 0)**

**Signal diagram:**
- 2454 -
**Signal sources for E_ZSW1**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready for switching on</td>
<td>p2080[0] = r0899.0</td>
<td>[8932] [8732] [8832]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready for operation</td>
<td>p2080[1] = r0899.1</td>
<td>[8932] [8732] [8832]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled</td>
<td>p2080[2] = r0899.2</td>
<td>[8932] [8732] [8832]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault present</td>
<td>p2080[3] = r2139.3</td>
<td>[8060]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No OFF2 effective</td>
<td>p2080[4] = r0899.4</td>
<td>[8932] [8732] [8832]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited</td>
<td>p2080[6] = r0899.6</td>
<td>[8932] [8732] [8832]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm present</td>
<td>p2080[7] = r2139.7</td>
<td>[8065]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = PLC requests control</td>
<td>p2080[9] = r0899.9</td>
<td>[8926] [8726] [8826]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = Pre-charging completed</td>
<td>p2080[11] = r0899.11</td>
<td>[8950] [8750] [8850]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Line contactor closed</td>
<td>p2080[12] = r0899.12</td>
<td>[8934] [8734] [8834]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<1> Used in telegram 370.
<2> The drive object is ready to accept data.
<3> Only for S120.
<4> Only for S120 and G150.
<5> Not for G130.

---

**Signal sources for E_ZSW1 (continued)**

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] signal source</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Function diagrams**

PROFIdrive - E_ZSW1 status word infeed interconnection

---

**References**

Fig. 2-50 2457 - E_ZSW1 status word infeed interconnection

Refer to [1020.7]
<1> The number of PZD receive words depends on the drive object type.

<2> The connector-biector converter only converts the lower 16 bits irrespective of the input variable.

<3> The following representation applies for words: 4000 hex = 100 % for double words 4000 0000 hex = 100 %.

<4> In order to maintain the PROFIdrive profile, receive word 1 must be used as control word (STW1) (due to bit 10 "control requested").

<5> Using the connector-biector converters, the bits can be extracted from two of the PZD receive words 5 to 32 and used as biectors.

<6> Every PZD word can be assigned a word or a double word. Only one of the 2 interconnection parameters r2050 or r2060 can have a value 0 for a PZD word.

<7> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td><strong>DO: ENC, SERVO, TM41, VECTOR</strong></td>
<td><strong>fp_2468_54_eng.vsd</strong></td>
<td><strong>Function diagram</strong></td>
<td><strong>- 2468 -</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PROFIdrive - IF1 receive telegram, free interconnection via BICO (p0922 = 999)
Fig. 2-52  2470 - IF1 send telegram, free interconnection via BICO (p0922 = 999)

- The number of PZD send words depends on the drive object type.
- A PZD send word can either be supplied via connector input p2051[x] (WORD) or via p2061[x] (DWORD).
- The two corresponding connector inputs cannot be interconnected.
- Physical word and double word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex or 4000 0000 hex in the case of double words, if the input variable has the value p200x).
- The following applies for temperature values: 100°C -> 100% = 4000 hex or 4000 0000 hex, 0°C -> 0%.
- To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1), not as DWORD.

DO: ENC, SERVO, TM41, VECTOR

PROFIdrive - IF1 send telegram, free interconnection via BICO (p0922 = 999)

Refer to [1020.7]
5 binector-connector converter

- For clock-cycle synchronous all drive objects, these signals must not be interconnected (slave sign-of-life).

- Only for SINAMICS S120.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: All objects</td>
<td>p2472_54_eng.vsd</td>
<td>Function diagram</td>
<td>- 2472 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFIdrive - IF1 status words, free interconnection</td>
<td>fp_2472_54_eng.vsd</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Fig. 2-54 2481 – IF1 receive telegram, free interconnection via BICO (p0922 = 999)

- PROFIdrive - IF1 receive telegram

1. When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

2. Using the two connector-binector converters, two of the PZD receive words 3 to 5 can be converted into binectors for continued interconnection.

3. The following representation applies for words: 4000 hex = 100 %.

4. To comply with the PROFIdrive profile, receive word 1 for A_INF, B_INF, S_INF and CU_S must be used as control word (STW1) (due to bit 10 "control requested").
**Description:**

The image contains a function diagram illustrating the process of sending a telegram via BICO (p0922 = 999) in the context of PROFIdrive. The diagram is labeled as Fig. 2-55 and includes multiple send word sequences and interconnection scenarios.

### Diagram Details:

- **Header:**
  - Drive object 1
  - Drive object 2
  - Drive object n
  - Drive object m
  - Trailer

- **PROFINET PROFIBUS**

### Send Word Sequences:

1. **Send Word 1:**
   - p2051[0] (0)
   - p2051[1] (0)
   - p2051[2] (0)
   - p2051[3] (0)
   - p2051[4] (0)
   - p2051[5] (0)
   - p2051[6] (0)
   - p2051[7] (0)
   - p2051[8] (0)
   - p2051[9] (0)
   - p2051[10] (0)
   - p2051[11] (0)
   - p2051[12] (0)
   - p2051[13] (0)
   - p2051[14] (0)
   - p2051[15] (0)
   - p2051[16] (0)
   - p2051[17] (0)
   - p2051[18] (0)
   - p2051[19] (0)
   - p2051[20] (0)
   - p2051[21] (0)

2. **Send Word 2:**
   - p200x

3. **Send Word 3:**
   - R2053[0...4], [0...7], [0...20]

4. **Send Word 4:**
   - Reference variables for further interconnection

5. **Send Word 5:**
   - P2051

6. **Send Word 6:**
   - IF1 Diag send word

7. **Send Word 7:**
   - 2053[0...4, 0...7, 0...20]

### Notes:

- The number of PZD receive words depends on the drive object type.
- TM15DI_DO, TM120 not for G130/G150.
- The following representation applies for words: 4000 hex = 100 %.
- The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
- The following applies for temperature values:
  - 100 °C -> 100 % = 4000 hex; 0 °C -> 0 %.
- In order to maintain the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1) for A_INF, B_INF, S_INF and CU_S.
- Using the bioperator/connector converters at [2472], bits of 4 send words can be interconnected with any bioperators.
- A_INF and S_INF not for G130/G150.
Fig. 2-56 2485 - IF2 receive telegram, free interconnection via BICO

1. The number of PZD receive words depends on the drive object type.
2. The connector-binector converter only converts the lower 16 bits irrespective of the input variable.
3. The following representation applies for words: 4000 hex = 100 % for double words: 40000000 hex = 100 %.
   The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
4. Using the connector-binector converters, the bits can be extracted from two of the PZD receive words 5 to 16 and used as binectors.
5. Every PZD word can be assigned a word or a double word. Only one of the 2 interconnection parameters r8850 or r8860 can have a value = 0 for a PZD word.
6. When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

Reference quantities for further interconnection p300x
Function diagrams

PROFIdrive

Fig. 2-57 2487 – IF2 send telegram, free interconnection

11.05.11 V04.05.00

Reference quantities for further interconnection p200x

<1> The number of PZD send words depends on the drive object type.

<2> A PZD send word can either be supplied via connector input p8851[x] (WORD) or via p8861[x] (DWORD). The two corresponding connector inputs cannot be interconnected.

<3> Physical word and double word values are inserted in the telegram as referenced variables. p200x apply as reference variables (telegram contents = 4000 hex or 4000 0000 hex in the case of double words, if the input variable has the value p200x). The following applies for temperature values: 100 °C -> 100 % = 4000 hex; 0 °C -> 0% = 4000 0000 hex.
Fig. 2-58 2489 – IF2 status words, free interconnection

Function diagram

- DO: A_INF, B_INF, ENC, S_INF, SERVO, VECTOR
- Status word 1
- Status word 2
- Status word 3
- Status word 4
- Status word 5

5 binector-connector converter

fp_2489_54_eng.vsd
<1> B_INF and S_INF not for S150 and G130.
<2> A_INF, S_INF, TM15DI_DO and TM120 not for G130/G150.
<3> The following representation applies for words: 4000 hex = 100 %.
The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
The following applies for temperature values: 100 °C -> 100 % = 4000 hex; 0 °C -> 0 %.
<4> Using the two connector-binector converters, two of the PZD receive words 3 to 5 can be converted into binectors for continued interconnection.
<5> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.
<6> Not for TB30, TM15DI_DO, TM31 and TM120.

Reference quantities for further interconnection
p200x

2 connector-binector converter

p8898[1].0
p8898[1].15
p8898[0].15
p8898[0].0

r8894.0
r8894.15

r8895.0
r8895.15

11.05.10 V04.05.00
S120/S150/G130/G150

Function diagram

PROFIdrive - IF2 send telegram, free interconnection

**Reference quantities for further interconnection**

- B_INF and S_INF not for S150 and G130.
- A_INF and S_INF not for G130/G150.
- The following representation applies for words: 4000 hex = 100 %.
- The reference variables p200x apply for the ongoing interconnection (100 % -> p200x).
- The following applies for temperature values: 100 °C -> 100 % = 4000 hex; 0 °C -> 0 %.
- Using the binector/connector converters at [2472], bits of 4 send words can be interconnected with any binectors.
- Only for CU_S and CU_G.
- Not for TB30, TM15DI_DO, TM31 and TM120.
- TM15DI_DO and TM120 not for G130/G150.

**Table 2-60**

<table>
<thead>
<tr>
<th>DO: A_INF, B_INF, CU_G, CU_S, S_INF, TB30, TM15DI_DO, TM31, TM120</th>
<th>fp_2493_54_eng.vsd</th>
<th>Function diagram</th>
</tr>
</thead>
</table>

**Fig. 2-60**

PROFIBUS PROFINET

Refer to [1020.7]

PROFIdrive Sampling time

- 11.05.11 V04.05.00

S120/S150/G130/G150
### Signal targets for CU_STW1

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>[Function diagram] internal control word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_STW1.0</td>
<td>Central measuring probe, synchronizing signal source</td>
<td>p0681[0] = r2090.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_STW1.1</td>
<td>RTC real time synchronization PING</td>
<td>p3104 = r2090.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_STW1.2</td>
<td>ESR-Trigger</td>
<td>p0890.0 = r2090.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_STW1.3</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_STW1.4</td>
<td>Reserved</td>
<td></td>
<td></td>
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<tr>
<td>CU_STW1.5</td>
<td>Reserved</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>CU_STW1.6</td>
<td>Reserved</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_STW1.7</td>
<td>1. Acknowledge faults</td>
<td>p2103[0] = r2090.7</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>CU_STW1.8</td>
<td>Reserved</td>
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<tr>
<td>CU_STW1.9</td>
<td>Reserved</td>
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<td></td>
</tr>
<tr>
<td>CU_STW1.10</td>
<td>Control via PLC</td>
<td>p3116 = r2090.10</td>
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<tr>
<td>CU_STW1.11</td>
<td>Reserved</td>
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<tr>
<td>CU_STW1.12</td>
<td>Master sign-of-life bit 0</td>
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<tr>
<td>CU_STW1.13</td>
<td>Master sign-of-life bit 1</td>
<td></td>
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<1> Used in telegrams 390 to 394.
<2> Only available when the function module "extended setpoint channel" is active (r0108.9 = 1).
### Signal sources for CU_ZSW1

| Signal     | Meaning                                      | Interconnection parameters | [Function diagram] Internal status word | [Function diagram] signal source | Inverted | Inverted
|------------|----------------------------------------------|----------------------------|----------------------------------------|----------------------------------|----------|----------
| CU_ZSW1.0  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.1  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.2  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.3  | 1 = Fault present                            |                           |                                        | p2081[3] = r2139.3               |          |          |
| CU_ZSW1.4  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.5  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.6  | Reserved                                     |                           |                                        |                                  |          |          |
| CU_ZSW1.7  | 1 = Alarm present                            |                           |                                        | p2081[7] = r2139.7               |          |          |
| CU_ZSW1.8  | 1 = System time synchronized (SYNC)          |                           |                                        | p2081[8] = r0899.8               |          |          |
| CU_ZSW1.9  | 1 = No alarm present                         |                           |                                        | p2081[8] = r3114.9               |          | ✓        |
| CU_ZSW1.10 | 1 = No fault present                          |                           |                                        | p2081[10] = r3114.10             |          | ✓        |
| CU_ZSW1.11 | 1 = No safety message present                |                           |                                        | p2081[11] = r3114.11             |          | ✓        |
| CU_ZSW1.12 | Slave sign-of-life bit 0                     |                           |                                        |                                  |          |          |
| CU_ZSW1.13 | Slave sign-of-life bit 1                     |                           |                                        |                                  |          |          |
| CU_ZSW1.14 | Slave sign-of-life bit 2                     |                           |                                        |                                  |          |          |
| CU_ZSW1.15 | Slave sign-of-life bit 3                     |                           |                                        |                                  |          |          |

<1> Used in telegrams 390 to 394.

<2> The ZSW1 is generated using the binector-connector converter (Bi: p2080[0...15], inversion: p2088[0...p2088[0...15])

---

### Table of Digital Inputs

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**PROFIdrive - CU_ZSW1 status word 1 Control Unit interconnection**

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### Signal targets for A_DIGITAL

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<th>Interconnection parameters</th>
<th>[Function diagram] internal status word</th>
<th>[Function diagram] signal target</th>
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<td>A_DIGITAL.0</td>
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<td>p0742 = r2091.4</td>
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1. Used in telegrams 390 to 396.
2. Can be set via p0728 as input (DI) or output (DO).
3. Pre-assignment, can be freely changed.

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PROFIdrive sampling time 
Refer to [1020.7]
### Signal targets for E_DIGITAL

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<tr>
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<th>Meaning</th>
<th>Interconnection parameters&lt;3&gt;</th>
<th>[Function diagram] internal status word</th>
<th>[Function diagram] signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_DIGITAL.0</td>
<td>Digital input 8 (DI/DO 8)</td>
<td>p2081[0] = r0722.8</td>
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<tr>
<td>E_DIGITAL.1</td>
<td>Digital input 9 (DI/DO 9)</td>
<td>p2081[1] = r0722.9</td>
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<tr>
<td>E_DIGITAL.2</td>
<td>Digital input 10 (DI/DO 10)</td>
<td>p2081[2] = r0722.10</td>
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<tr>
<td>E_DIGITAL.3</td>
<td>Digital input 11 (DI/DO 11)</td>
<td>p2081[3] = r0722.11</td>
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<tr>
<td>E_DIGITAL.4</td>
<td>Digital input 12 (DI/DO 12)</td>
<td>p2081[4] = r0722.12</td>
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<td>p2081[11] = r0722.3</td>
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<tr>
<td>E_DIGITAL.12</td>
<td>Digital input 4 (DI 4)</td>
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<tr>
<td>E_DIGITAL.13</td>
<td>Digital input 5 (DI 5)</td>
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<td>Digital input 6 (DI 6)</td>
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<tr>
<td>E_DIGITAL.15</td>
<td>Digital input 7 (DI 7)</td>
<td>p2081[15] = r0722.7</td>
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</table>

<1> Used in telegrams 390 to 396.

<2> Can be set via p0728 as input (DI) or output (DO).

<3> Pre-assignment, can be freely changed.

<4> Only for CU320-2.

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PROFIdrive - E_DIGITAL interconnection

20.09.11 V04.05.00 S120/S150/G130/G150
## Signal targets for A_DIGITAL_1

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<tr>
<th>Signal</th>
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<th>Interconnection</th>
<th>[Function diagram]</th>
<th>[Function diagram]</th>
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- **<1>** Used in telegrams 393 to 396.
- **<2>** Pre-assignment, can be freely changed.
- **<3>** Only for CU_S_AC or CU_I_D410.

---

**Function diagrams**

- **DO: CU_G, CU_S**

- **PROFIdrive - A_DIGITAL_1 interconnection**
### Signal targets for E_DIGITAL_1

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<1> Used in telegrams 393 to 396.  
<2> Not for CU320-2.  
<3> Pre-assignment, can be freely changed.

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2.7 Internal control/status words

Function diagrams

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<td>Control word, sequence control</td>
<td>2-1053</td>
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<tr>
<td>2503</td>
<td>Status word, sequence control</td>
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<td>2505</td>
<td>Control word, setpoint channel</td>
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<td>2520</td>
<td>Control word, speed controller</td>
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<td>2522</td>
<td>Status word, speed controller</td>
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<td>Status word, closed-loop control</td>
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<td>Status word, current control</td>
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<td>Status word, monitoring functions 2</td>
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<td>2537</td>
<td>Status word, monitoring functions 3</td>
<td>2-1062</td>
</tr>
<tr>
<td>2546</td>
<td>Control word, faults/alarms</td>
<td>2-1063</td>
</tr>
<tr>
<td>2548</td>
<td>Status word, faults/alarms 1 and 2</td>
<td>2-1064</td>
</tr>
</tbody>
</table>
Fig. 2-67 2501 – Control word, sequence control

1. OFF2 (electrical)
   0 = ON
   1 = OFF1
2. OFF2 (electrical)
   0 = OFF2
   1 = Operating condition, no coast stop (no OFF2)
3. OFF3 (fast stop)
   0 = OFF3
   1 = Operating condition, no quick stop (no OFF3)
4. STW sequence ctrl
   0 = OFF2
   1 = Command, open brake
5. STW sequence ctrl
   0 = OFF3
   1 = Command, close brake
6. STW sequence ctrl
   0 = OFF2
   1 = Jog 1
   2 = Jog 2
7. STW sequence ctrl
   0 = OFF3
   1 = Jog 1
   2 = Jog 2
8. STW sequence ctrl
   0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
   1 = Operating condition, no coast stop (no OFF2)
   2 = Operating condition, no quick stop (no OFF3)
9. STW sequence ctrl
   0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
   1 = Operating condition, no coast stop (no OFF2)
   2 = Operating condition, no quick stop (no OFF3)
10. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Operating condition, no coast stop (no OFF2)
    2 = Operating condition, no quick stop (no OFF3)
11. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Operating condition, no coast stop (no OFF2)
    2 = Operating condition, no quick stop (no OFF3)
12. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Operating condition, no coast stop (no OFF2)
    2 = Operating condition, no quick stop (no OFF3)
13. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Operating condition, no coast stop (no OFF2)
    2 = Operating condition, no quick stop (no OFF3)
14. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Command, close brake
15. STW sequence ctrl
    0 = STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
    1 = Command, close brake

<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).
<2> Only for telegram 220.
<3> When the master control is retrieved, predefined by STARTER or AOP30.
<4> Only applies if the function module "extended brake control (r0108.14 = 1)" is active.
<5> For DO ENC only bit 10.
<6> PROFIdrive interconnection: For PROFIdrive standard telegrams, the upper inputs are connected with PROFIdrive-STW1 [2415] and [2416]. Only relevant for CDS0.
Fig. 2-68 2503 – Status word, sequence control

**Internal control/status words - Status word, sequence control**

**Function diagrams**

- **DO: ENC, SERVO, VECTOR**

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word sequence control</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Ready for switching on</td>
</tr>
<tr>
<td>1</td>
<td>Ready for operation (DC link loaded, pulses inhibited)</td>
</tr>
<tr>
<td>2</td>
<td>Operation enabled (drive follows n_set)</td>
</tr>
<tr>
<td>3</td>
<td>Jog active</td>
</tr>
<tr>
<td>4</td>
<td>No coast down active (OFF2 inactive)</td>
</tr>
<tr>
<td>5</td>
<td>No fast stop active (OFF3 inactive)</td>
</tr>
<tr>
<td>6</td>
<td>Switching on inhibited active</td>
</tr>
<tr>
<td>7</td>
<td>Drive ready</td>
</tr>
<tr>
<td>8</td>
<td>Controller enable</td>
</tr>
<tr>
<td>9</td>
<td>Control requested</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>Pulses enabled</td>
</tr>
<tr>
<td>12</td>
<td>Open the holding brake (only for booksize units when the brake is connected to the power unit)</td>
</tr>
<tr>
<td>13</td>
<td>Command, close holding brake</td>
</tr>
<tr>
<td>14</td>
<td>Pulse enable from the brake control</td>
</tr>
<tr>
<td>15</td>
<td>Setpoint enable from the brake control</td>
</tr>
</tbody>
</table>

- **Bit 9 = 1 --> Ready to exchange process data**

- **Bit 9 = 1 for DO ENC only bit 9.**

- **For DO ENC only bit 9.**

- **DO ENC, SERVO, VECTOR**

- **fp_2503_54_eng.vsd**

- **Function diagram**

- **ZSW sequence ctrl**

- **2000.00 μs**

- **SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A**

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INF operation
Internal control/status words - Control word, setpoint channel

- Bit 0: Fixed setpoint channel
- Bit 1: Fixed setpoint channel
- Bit 2: Fixed setpoint channel
- Bit 3: Fixed setpoint channel
- Bit 4: Reserved
- Bit 5: Inhibit negative direction
- Bit 6: Inhibit positive direction
- Bit 7: Reserved
- Bit 8: Reserved
- Bit 9: Reserved
- Bit 10: Reserved
- Bit 11: Setpoint inversion
- Bit 12: Reserved
- Bit 13: Motorized potentiometer, raise
- Bit 14: Motorized potentiometer, lower
- Bit 15: Bypass ramp-function generator

STW setpoint channel

To fixed speed setpoints [3010.2]
To direction limiting and direction reversal [3040.3]
To direction limiting and direction reversal [3040.5]
To direction limiting and direction reversal [3040.2]
To the motorized potentiometer [3020.1]
To the motorized potentiometer [3020.1]
To the setpoint channel [3060.1] [3070.3]

Function diagrams

DO: SERVO, VECTOR, VECTORGL, VECTORMV
Fig. 2-70

Control word, speed controller

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Control word, speed controller</th>
<th>Servo</th>
<th>Vector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1 = speed controller, hold I component</td>
<td>-</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 = speed controller, set I component</td>
<td>-</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>8</td>
<td>1 = Travel to fixed stop</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>1 = Droop enable</td>
<td>-</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1 = Closed-loop torque control active</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Set speed adaptation controller I component</td>
<td>-</td>
<td>✔</td>
</tr>
</tbody>
</table>

- STW n_ctrl
- 1000.00 µs

- r1406.11
- r1406.5
- r1406.8
- r1406.4
- r1406.6
- r1406.12
- r1406.15

<1> Only for Servo.
<2> Only for SINAMICS S120.

DO: SERVO, VECTOR

Internal control/status words - Control word, speed controller

fp_2520_54_eng.vsd

Function diagram

- 2520 -
### Internal control/status words - Status word, speed controller

<table>
<thead>
<tr>
<th>Bit-No.</th>
<th>Status word, speed controller</th>
<th>Servo Vector</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = U/f control active</td>
<td>✓</td>
</tr>
<tr>
<td>1</td>
<td>1 = Sensorless operation active</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>1 = Closed-loop torque control active</td>
<td>✓</td>
</tr>
<tr>
<td>3</td>
<td>1 = Closed-loop speed control active</td>
<td>✓</td>
</tr>
<tr>
<td>4</td>
<td>1 = Speed setpoint from DSC</td>
<td>✓</td>
</tr>
<tr>
<td>5</td>
<td>1 = Speed controller, I component held</td>
<td>✓</td>
</tr>
<tr>
<td>6</td>
<td>1 = Speed controller, I component set</td>
<td>✓</td>
</tr>
<tr>
<td>7</td>
<td>1 = Torque limit reached</td>
<td>✓</td>
</tr>
<tr>
<td>8</td>
<td>1 = Torque limiting, upper, active</td>
<td>✓</td>
</tr>
<tr>
<td>9</td>
<td>1 = Torque limiting, lower, active</td>
<td>✓</td>
</tr>
<tr>
<td>10</td>
<td>1 = Droop enabled</td>
<td>✓</td>
</tr>
<tr>
<td>11</td>
<td>1 = Speed setpoint limited</td>
<td>✓</td>
</tr>
<tr>
<td>12</td>
<td>1 = Ramp-function generator set</td>
<td>✓</td>
</tr>
<tr>
<td>13</td>
<td>1 = Sensorless operation due to a fault</td>
<td>✓</td>
</tr>
<tr>
<td>14</td>
<td>1 = I/f control active</td>
<td>✓</td>
</tr>
<tr>
<td>15</td>
<td>1 = Torque limit reached (without pre-control)</td>
<td>✓</td>
</tr>
<tr>
<td>16</td>
<td>Reserved</td>
<td>✓</td>
</tr>
<tr>
<td>17</td>
<td>1 = Speed limiting active</td>
<td>✓</td>
</tr>
<tr>
<td>18</td>
<td>Reserved</td>
<td>✓</td>
</tr>
<tr>
<td>19</td>
<td>1 = DSC position controller limited</td>
<td>✓</td>
</tr>
<tr>
<td>20</td>
<td>1 = DSC with spline on</td>
<td>✓</td>
</tr>
<tr>
<td>21</td>
<td>1 = Speed pre-control for DSC with spline on</td>
<td>✓</td>
</tr>
<tr>
<td>22</td>
<td>1 = Torque pre-control for DSC with spline on</td>
<td>✓</td>
</tr>
<tr>
<td>23-32</td>
<td>Reserved</td>
<td>✓</td>
</tr>
</tbody>
</table>

- **1** = Only for servo control without encoder.
- **2** = Only for SERVO.
- **3** = Only for SINAMICS S120.

**Fig. 2-71**

2522 – Status word, speed controller

**Table 2-1057**

<table>
<thead>
<tr>
<th>DO: SERVO, VECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>fp_2522_54_eng.vsd</td>
</tr>
<tr>
<td>Function diagram</td>
</tr>
<tr>
<td>S120/S150/G130/G150</td>
</tr>
<tr>
<td>Bit No.</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>6</td>
</tr>
<tr>
<td>7</td>
</tr>
<tr>
<td>8</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>10</td>
</tr>
<tr>
<td>11</td>
</tr>
<tr>
<td>12</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>14</td>
</tr>
<tr>
<td>15</td>
</tr>
</tbody>
</table>

<1> Only for U/f control.
<2> Not for SERVO.
<3> Only for SINAMICS S120.

Refer to [1020.7]
### Status word, monitoring functions 1

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word, monitoring functions 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
</tr>
<tr>
<td>1</td>
<td>$</td>
</tr>
<tr>
<td>2</td>
<td>$</td>
</tr>
<tr>
<td>3</td>
<td>$1 = n_{act} \geq 0$</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>$n_{act} &gt; n_{max}$</td>
</tr>
<tr>
<td>7</td>
<td>$1 = \text{speed setpoint - actual value deviation within tolerance} t_{off}$</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

<1> $n_{act} = \text{smoothed speed actual value} r2169 [8010.2]$. 

**Function Diagram**

- **DO:** SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL
- **Function Diagram:** fp_2534_51_eng.vsd
- **Date:** 08.07.09
- **Version:** V04.05.00
- **Device:** SINAMICS
<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word, monitoring functions 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>1 = [n_set] &lt; p2161</td>
</tr>
<tr>
<td>5</td>
<td>1 = [n_set] &gt; 0</td>
</tr>
<tr>
<td>6</td>
<td>1 = Motor blocked</td>
</tr>
<tr>
<td>7</td>
<td>1 = Motor stalled</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>1 = Torque setpoint &lt; torque threshold value 1 (p2174)</td>
</tr>
<tr>
<td>11</td>
<td>1 = Load monitoring signals an alarm</td>
</tr>
<tr>
<td>12</td>
<td>1 = Load monitoring signals a fault</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

*<1> Only relevant if the function module “extended signals/monitoring functions” (r0108.17 = 1) is active.*

---

**Fig. 2-75**

**2536 - Status word, monitoring functions 2**

**Function diagram**

**DO: SERVO, VECTOR**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal control/status words - Status word, monitoring functions 2</td>
<td>fp_2536_54_eng.vsd</td>
<td>Function diagram</td>
<td>- 2536 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
1 = |n_act| < speed threshold value 3 (p2161)  
2 = Reserved  
3 = Reserved  
4 = Speed setpoint - actual value deviation within tolerance t_on  
5 = Ramp-up/ramp-down completed  
6 = Current below residual current threshold  
7 = Reserved  
8 = Reserved  
9 = Reserved  
10 = Reserved  
11 = Torque utilization < torque threshold value 2 (p2194)  
12 = Reserved  
13 = Reserved  
14 = Reserved  
15 = Reserved

<n_act> = smoothed speed actual value r2169 [8010.2].

DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL

fp_2537_51_eng.vsd

2537 - Status word, monitoring functions 3

11
8
5
2
0
3
6
7
4
10
9
12
13
14
15

PROFdrive bit

ZSW monitoring functions 3

From speed signals 1 [8010.6]

From speed signals 1 [8010.6]

From speed signals 2 [8011.6]

From speed signals 2 [8011.6]

From torque signals [8012.5]

<1>n_act = smoothed speed actual value r2169 [8010.2].
**Function Diagram 2-77**

**Control word, faults/alarms**

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Control word, faults/alarms</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Reserved</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>= Acknowledge faults</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>= External alarm 1 (A07850)</td>
</tr>
<tr>
<td>11</td>
<td>= External alarm 2 (A07851)</td>
</tr>
<tr>
<td>12</td>
<td>= External alarm 3 (A07852)</td>
</tr>
<tr>
<td>13</td>
<td>= External fault 1 (F07860)</td>
</tr>
<tr>
<td>14</td>
<td>= External fault 2 (F07861)</td>
</tr>
<tr>
<td>15</td>
<td>= External fault 3 (F07862)</td>
</tr>
</tbody>
</table>

**Internal control/status words - Control word, faults/alarms**

- **DO:** All objects
- **Parameter:** 
  - p2102
  - p2103
  - p2104
  - p2105
  - p2106
  - p2107
  - p2108
  - p3110 [ms]

- **Internal control/status words:** 
  - 1. Acknowledge
  - 2. Acknowledge
  - 3. Acknowledge

- **Diagram Notes:**
  - (1) These parameters refer to the Command Data Sets (CDS) depending on the individual drive object (DO).
  - (2) This parameter refers to the Control Unit and is used as source to simultaneously acknowledge all faults on all drive objects.

---

**Diagram Elements:**

- **Profdrive bit**
- **To alarm buffer [8065.1]**
- **To fault buffer [8060.1]**
- **4000.00 μs**

---

**Function Diagram Title:** SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

**Function Diagram Reference:** fp_2546_51_eng.vsd

**Function Diagram Code:** - 2546 -
Internal control/status words - Status word, faults/alarms 1 and 2

1 = Acknowledgement running (2139.0)
1 = Acknowledgement required (2139.1)
Reserved
1 = Fault present (2139.3)
Reserved
1 = Safety message present (2139.5)
1 = Internal message 1 present (2139.6)
1 = Alarm present (2139.7)
1 = Internal message 2 present (2139.8)
Reserved
1 = Alarm class bit 0 (2139.11)
1 = Alarm class bit 1 (2139.12)
Reserved
Reserved
1 = Alarm present (2139.1)
1 = Safety message present (2139.5)
1 = Alarm present (2139.7)
1 = Internal message 2 present (2139.8)
Reserved
1 = Alarm class bit 0 (2139.11)
1 = Alarm class bit 1 (2139.12)
Reserved
Reserved
1 = Alarm present (2139.1)
1 = Safety message present (2139.5)
1 = Alarm present (2139.7)
1 = Internal message 2 present (2139.8)
Reserved
1 = Alarm class bit 0 (2139.11)
1 = Alarm class bit 1 (2139.12)
Reserved
Reserved
1 = Alarm present (2139.1)
1 = Safety message present (2139.5)
1 = Alarm present (2139.7)
1 = Internal message 2 present (2139.8)
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1 = Alarm class bit 1 (2139.12)
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Reserved
1 = Alarm class bit 0 (2139.11)
1 = Alarm class bit 1 (2139.12)
Reserved
Reserved
1 = Alarm present (2139.1)
## 2.8 Sequence control

### Function diagrams

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</tr>
<tr>
<td>2634 – Missing enable signals, line contactor control, logic operation</td>
<td>2-1067</td>
</tr>
</tbody>
</table>
Fig. 2-79 2610 – Sequencer

**S1: Switching on inhibited**
- ZSWA.06 = 1, ZSWA.11 = 0
- ZSWA.00.0102 = 0
- Pulses inhibited

**S2: Ready for switching on**
- Main contactor is OPEN
- Wait for power-up or jog

**S3: Ready**
- ZSWA.00/01/02 = 1
- ZSWA.11 = 1
- ZSWA.06 = 0
- Line contactor is CLOSED
- Wait for pre-charging

**S4: Operation**
- ZSWA.00/01/02 = 1
- ZSWA.11 = 1
- ZSWA.06 = 0
- No jog operation: Setpoints enabled
- Pulses enabled
- Controller enabled

**S5a: Ramp stop**
- ZSWA.00/01 = 1
- ZSWA.11 = 1
- ZSWA.02/06 = 0
- Bring the drive to n <= 0 along the Ramp-funktion generator, then inhibit the pulses

**S5b: Fast stop**
- ZSWA.00/01 = 1
- ZSWA.11 = 1
- ZSWA.02/06 = 0
- Bring the drive to n <= 0 along the fast stopping ramp or torque limit, then inhibit the pulses

**S5c: Jogging - down ramp**
- ZSWA.00/01 = 1
- ZSWA.11 = 1
- ZSWA.02/06 = 0
- Bring the drive to n <= 0 along the Ramp-funktion generator, then inhibit the pulses

**SSa: Ramp stop**
- ZSWA.00/01 = 1
- ZSWA.11 = 1
- ZSWA.02/06 = 0
- Bring the drive to n <= 0 along the Ramp-funktion generator, then inhibit the pulses

**Faults**
- F07300...F07802
- F6000

**Sequence control - Sequencer**

**Fault with OFF1 – or OFF3 response**

**Controller enable**

**OFF3** (has priority over jogging)

**OFF2** (has priority over jogging)

**Faults**
- F07300...F07802
- F6000

**Missing enable signals**

**Closed-loop control operation**

**De-magnetization completed** (r0046.27 = 0)

**No LT_faul**
Fig. 2-80

Missing enable signals

Missing enable signals that prevent the drive going into operation (this situation can be detected at the ZSW sequence control, infed r0899.2 = 1 [8926] <5>).

Missing enable signals

<table>
<thead>
<tr>
<th>Bit Nr.</th>
<th>Bedeutung</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = OFF1, enable missing</td>
</tr>
<tr>
<td>1</td>
<td>1 = OFF2, enable missing</td>
</tr>
<tr>
<td>2</td>
<td>1 = OFF3, enable missing</td>
</tr>
<tr>
<td>3</td>
<td>1 = Enable operation missing</td>
</tr>
<tr>
<td>4</td>
<td>1 = Armature short-circuit/DC braking, enable missing</td>
</tr>
<tr>
<td>5</td>
<td>1 = STOP2, enable missing</td>
</tr>
<tr>
<td>6</td>
<td>1 = STOP1, enable missing</td>
</tr>
<tr>
<td>7</td>
<td>1 = EP terminals, enable missing</td>
</tr>
<tr>
<td>8</td>
<td>1 = Infeed, enable missing</td>
</tr>
<tr>
<td>9</td>
<td>1 = Ramp-function generator enable missing</td>
</tr>
<tr>
<td>10</td>
<td>1 = Ramp-function generator start missing</td>
</tr>
<tr>
<td>11</td>
<td>1 = Setpoint, enable missing</td>
</tr>
<tr>
<td>12</td>
<td>1 = OFF1, enable, internal missing</td>
</tr>
<tr>
<td>13</td>
<td>1 = OFF2, enable, internal missing</td>
</tr>
<tr>
<td>14</td>
<td>1 = OFF3, enable, internal missing</td>
</tr>
<tr>
<td>15</td>
<td>1 = Pulse enable, internal missing</td>
</tr>
<tr>
<td>16</td>
<td>1 = Internal armature short circuit/DC braking, enable missing</td>
</tr>
<tr>
<td>17</td>
<td>1 = STOP2, enable internal missing</td>
</tr>
<tr>
<td>18</td>
<td>1 = STOP1, enable internal missing</td>
</tr>
<tr>
<td>19</td>
<td>1 = Function bypass active</td>
</tr>
<tr>
<td>20</td>
<td>1 = Drive inactive or not operational</td>
</tr>
<tr>
<td>21</td>
<td>1 = De-magnetization not completed</td>
</tr>
<tr>
<td>22</td>
<td>1 = Open brake missing</td>
</tr>
<tr>
<td>23</td>
<td>1 = Cooling system ready missing</td>
</tr>
<tr>
<td>24</td>
<td>1 = Speed controller inhibited</td>
</tr>
<tr>
<td>25</td>
<td>1 = Jog setpoint active</td>
</tr>
</tbody>
</table>

Logic operation

-2634-
2.9 Brake control

Function diagrams

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<td>2704</td>
<td>Extended brake control, zero-speed detection (r0108.14 = 1)</td>
<td>2-1070</td>
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<tr>
<td>2707</td>
<td>Extended brake control, open/close brake (r0108.14 = 1)</td>
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<tr>
<td>2711</td>
<td>Extended brake control, signal outputs (r0108.14 = 1)</td>
<td>2-1072</td>
</tr>
</tbody>
</table>
Fig. 2-81  2701 – Basic brake control (r0108.14 = 0)

### Brake control - Basic brake control (r0108.14 = 0)

**Function diagrams**

**DO: SERVO, VECTOR**

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<td>Brake control - Basic brake control (r0108.14 = 0)</td>
<td>fp_2701_54_eng.vsd</td>
<td>Function diagram</td>
<td>S120/S150/G130/G150</td>
<td>- 2701 -</td>
<td>30.03.11</td>
<td>V04.05.00</td>
<td></td>
</tr>
</tbody>
</table>
Brake control - Extended brake control, zero-speed detection (r0108.14 = 1)

1. Shutdown threshold of the standstill detection. In this case (e.g. when using a brake), another criterion than the speed actual value can be selected to clear the pulses. Otherwise, we recommend to keep the factory setting.

2. For p1276 = 300.000 s, the timer is de-activated, i.e. the timer output is always 0. Note: When operating a motor with a brake which must not be applied while the motor is rotating, the monitoring time of both timers must be set to 300 s.

3. For operation without brake, p1224[0...3] must be 0 (factory setting) in order to avoid undesirable interaction with the sequence control.

4. The internal signal comprises signals that lead to OFF1 or OFF3, e.g. BICO or fault response.

5. Only for SINAMICS S120.

---

**Function diagrams**

**Brake control**

Fig. 2-82 2704 – Extended brake control, zero-speed detection (r0108.14 = 1)

- For p1276 = 300.000 s, the timer is de-activated, i.e. the timer output is always 0. Note: When operating a motor with a brake which must not be applied while the motor is rotating, the monitoring time of both timers must be set to 300 s.

- For operation without brake, p1224[0...3] must be 0 (factory setting) in order to avoid undesirable interaction with the sequence control.

- The internal signal comprises signals that lead to OFF1 or OFF3, e.g. BICO or fault response.

- Only for SINAMICS S120.
Fig. 2-83 – Extended brake control, open/close brake (r0108.14 = 1)

Motor holding brake configuration
1 = Unconditionally close the holding brake
2 = Unconditionally open the holding brake
3 = Brake control active (brake connection can be interconnected using BICO)

Note:
A motor brake cannot be connected to all power units. p1215 is set to 3 and the brake is controlled via a digital output (e.g. TM31).

Priority assignment (high -> low): p1215, p0858, p0855, p0855/p1219, apply brake from standstill detection, p1218.

If the brake is permanently applied or released (p0855, p0856 or p1215), the drive does not wait until the brake is released or applied.

Brake control - Extended brake control, open/close brake (r0108.14 = 1)
Function diagrams

Brake control - Extended brake control, signal outputs (r0108.14 = 1)

1 = Command, open brake

1 = Command, close holding brake

1 = Open the holding brake

1 = Open the brake

<1> This pulse enable path only works for operation with brake (p1215 > 0).

<2> Only if Safety Integrated is active (Double Motor Module: X22, Chassis: X41).

<3> Only if an external motor holding brake is used, p1215 should be set to 3 and r1229.1 should be used as control signal.

<4> If the internal signal comprises signals that lead to OFF1 or OFF3, e.g., BICO or fault response.

<5> If the function module "extended brake control" is active (r0108.14 = 1), r1229.1 should be interconnected as control signal.

<6> Only for SINAMICS S120 booksize.

<7> Only for SINAMICS S120 Chassis/S150/G130/G150.

Note: Braking signal diagnostic evaluation (p1278) is only relevant for SBC (Safe Brake Control) (controls the Safe Brake Relay).

<table>
<thead>
<tr>
<th>1</th>
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</tbody>
</table>

DO: SERVO, VECTOR

Function diagrams

SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
## 2.10 Safety Integrated Basic Functions

### Function diagrams

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<td>2802 – Monitoring and faults/alarms</td>
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<tr>
<td>2804 – Status words</td>
<td>2-1076</td>
</tr>
<tr>
<td>2810 – STO (Safe Torque Off), SS1 (Safe Stop 1)</td>
<td>2-1077</td>
</tr>
<tr>
<td>2811 – STO (Safe Torque Off), safe pulse suppression</td>
<td>2-1078</td>
</tr>
<tr>
<td>2814 – SBC (Safe Brake Control), SBA (Safe Brake Adapter)</td>
<td>2-1079</td>
</tr>
</tbody>
</table>
Change safety parameters

Safety parameterizing enable

Enter password

x

= x

Effective password

Safety commissioning mode

-- select STO

DO: SERVO, VECTOR

Safety parameters p9601 ... p9899 can be changed

SI act_checksum CU

p9798

&

SI set_checksum CU

p9799

<3>

Safety parameters p9601 ... p9899 are valid

Reset safety parameters

Inhibit safety functions

p9601 = 0

[2810.3]

p9801 = 0

[2810.3]

&

Safety parameters p9601 ... p9899 can be reset to the factory settings via p0970, p3900

Exit safety commissioning mode

p0010 = 95

<1>

Comparator, refer to [1021]

<2> Analog signal memory, refer to [1021]

<3> The target checksum must be equal to the actual checksum.

Table:

<table>
<thead>
<tr>
<th>1</th>
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</tr>
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<tr>
<td>DO: SERVO, VECTOR</td>
<td>fp_2800_54_eng.vsd</td>
<td>Function diagram</td>
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<tr>
<td>SI Basic Functions - Parameter manager</td>
<td>15.11.11</td>
<td>V04.05.00</td>
<td>S120/S150/G130/G150</td>
<td></td>
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</tr>
</tbody>
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Safety Integrated Basic Functions

Function diagrams

Fig. 2-86 2802 – Monitoring and faults/alarms

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2810.7 STO selected on Control Unit
2810.8 STO selected on Motor Module
2800.3 Safety commissioning mode
2811.3 DIAG_U
2814.7 BR_DIAG
2810.4 Status SS1 CU
2810.4 Status SS1 MM

Additional diagnostics

Information

Faults/alarms

CU: F/A01600 ... 01699
MM: F/A30600 ... 30699

Safety monitoring functions

CU r9770
MM r9870
CU r9780
MM r9880

Safety Integrated version

Monitoring clock cycle

STOP F -> A CU
p9658
STOP F -> A MM
p9858

F01611
F30611

1 = Faults with response "NONE"

Timer for emergency retraction

1 = Faults with response "immediate pulse cancelation"

F01600/F30600 "STOP A initiated"

≥1

1 = STOP A To Safe Torque Off
[2810.5]
To Safe Brake Control
[2814.1]

≥1

r9772.9 (CU) [2804.2]
r9872.9 (MM) [2804.5]
r9772.15 (CU) [2804.2]
r9872.15 (MM) [2804.5]

1 = Faults with response "immediate pulse cancelation" that cannot be acknowledged

≤1

Stop F

r9780 CU/r9880 MM

Slave Motor Module ready for communication
r9872.24

<1>

Cross checking list

Diagnostics for STOP F

Additional diagnostics

<1> Only with a parallel Motor Module connection and enabled Extended Functions.

DO: SERVO, VECTOR

SI Basic Functions - Monitoring functions and faults/alarms

fp_2802_54_eng.vsd

Function diagram

S120/S150/G130/G150

15.11.11 V04.05.00

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### Safety Integrated Basic Functions

**Fig. 2-87** 2804 – Status words

**Status word Safety Integrated**

#### Control Unit

- Bit 0: 0 = STO active on Control Unit
- Bit 1: 2 = STOP A active
- Bit 2: 1 = STOP A cannot be acknowledged, active
- Bit 3: 1 = STO cause: Safety comm. mode
- Bit 4: 1 = SS1 delay time active on the Control Unit
- Bit 5: 1 = SS1 delay time active in the drive
- Bit 6: 1 = SS1 delay time active on the Motor Module
- Bit 7: 1 = SS1 delay time active in the drive

#### Motor Module

- Bit 0: 0 = STO active on Motor Module
- Bit 1: 2 = STOP A active
- Bit 2: 1 = STOP A cannot be acknowledged, active
- Bit 3: 1 = STO cause: Safety comm. mode
- Bit 4: 1 = SS1 delay time active on the Motor Module
- Bit 5: 1 = SS1 delay time active in the drive
- Bit 6: 1 = SS1 delay time active on the Control Unit
- Bit 7: 1 = SS1 delay time active in the drive

#### Safe Torque Off group

- Bit 0: 0 = STO active in group
- Bit 1: 2 = STOP A active
- Bit 2: 1 = STOP A cannot be acknowledged, active
- Bit 3: 1 = SS1 delay time active in group
- Bit 4: 1 = SS1 delay time active on all groups

#### Drive

- Bit 0: 0 = STO active in drive
- Bit 1: 2 = STOP A active
- Bit 2: 1 = STOP A cannot be acknowledged, active
- Bit 3: 1 = SS1 delay time active in the drive
- Bit 4: 1 = SS1 delay time active on all groups

#### Additional notes

- Bit 8: 1 = Shutdown paths of the group must be tested
- Bit 9: 1 = Shutdown paths must be tested
Fig. 2-88 2810 – STO (Safe Torque Off), SS1 (Safe Stop 1)

Redundant functions

Motor Module

Control Unit

<1> CU terminals that can be used for STO.

<2> Switch-on delay according to [1022] starts when the "request pulse suppression CU" is withdrawn.

<3> Value range see Parameter List.

<4> Redundant functions in the Control Unit (CU) and Motor Modules (MM).

<5> Only for Booksize.

<6> Only for VECTOR. The number of active AND inputs corresponds to the number of Motor Modules connected in parallel (p0120).

<7> Only for SINAMICS S120 Chassis/S150/G130/G150.

DO: SERVO, VECTOR

SI Basic Functions - STO (Safe Torque Off), SS1 (Safe Stop 1)
Fig. 2-89 2811 – STO (Safe Torque Off), safe pulse suppression

Motor Module

DRIVE-CLiQ Request pulse suppression CU [2810.8]

DO: SERVO, VECTOR

SI Basic Functions - STO (Safe Torque Off), Safe Pulse suppression

0 = Request pulse suppression MM

DRIVE-CLiQ Request pulse suppression CU

0 = STO_CU <1>

1 = STO active on Control Unit r9772.1

[2804.2]

1 = STO active on MM active

[2802.1]

r9872.1

1 = STO active* for sequence control

[2802.1]

DIAG_L

[2814.2]

DIAG_U

[2814.2]

<1> Transistors inhibited for a "0" signal.

STO: Safe Torque Off
### Safety Integrated Basic Functions

#### Function diagrams

**Fig. 2-90 2814 – SBC (Safe Brake Control), SBA (Safe Brake Adapter)**

**Control Unit**
- **Enable signals for SBC CU**
  - Safety enable p9601
  - Enable SBC p9602

**Causes for "close brake"**
- From the STO shutdown paths [2810.6]
  - 0 = STO_CU
  - 0 = STO_MM
- 0 = Pulses cancelled [2810.7]
- Safety fault [2802.8]
  - 1 = STOP A

**Motor Module**
- **Enable signals for SBC MM**
  - Safety enable p9801
  - Enable SBC p9802

**Causes for "safely close brake"**
- From the STO shutdown paths [2810.6]
  - 0 = STO_CU
  - 0 = STO_MM
- 0 = Pulses cancelled [2810.7]
- Safety fault [2802.8]
  - 1 = STOP A

---

**Safety Logic CU**
- **Implementation and monitoring of brake control**
- 1 = "Fault, brake control"
- 0 = "SBC requested"

**Safety Logic MM**
- **Implementation and monitoring of brake control**
- 1 = "Fault, brake control"
- 0 = "SBC requested"

---

**Note:**
- With VECTOR with activated "parallel circuit" Function Module (r0108.15 = 1), the holding brake may only be connected to a power unit (p7015).
## 2.11 Safety Integrated Extended Functions

### Function diagrams

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<tr>
<td>2825</td>
<td>SS1, SS2, SOS, internal STOP B, C, D, F</td>
<td>2-1083</td>
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<td>2851</td>
<td>TM54F (F-DI 5 ... F-DI 9)</td>
<td>2-1089</td>
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<td>TM54F (F-DO 0 ... F-DO 3, DI 20 ... DI 23)</td>
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<td>TM54F control interface (p9601.2 = 1 &amp; p9601.3 = 0)</td>
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</tr>
<tr>
<td>2856</td>
<td>TM54F Safe State selection</td>
<td>2-1092</td>
</tr>
<tr>
<td>2857</td>
<td>TM54F assignment (F-DO 0 ... F-DO 3)</td>
<td>2-1093</td>
</tr>
<tr>
<td>2860</td>
<td>SSM (Safe Speed Monitor)</td>
<td>2-1094</td>
</tr>
<tr>
<td>2861</td>
<td>SDI (Safe Direction)</td>
<td>2-1095</td>
</tr>
</tbody>
</table>
Fig. 2-91  2820 – SLS (Safety-Limited Speed)

Select SLS bit 0
SI Mtn integ STW p9720
Deselect SLS
SI Mtn SLS set_lim 0.000...100.000 [%]
p9533 (80.000)

Select SLS bit 1
SI Mtn SLS Gr CU 0.00...100000.00 [1/min]
p9531[0...3] (2000.00)

Conversion load side --> motor side

Motor encoder rotating/linear
p9516.0

SI Mtn SLS lim MM 0.00...100000.00 [mm/min]
p9331[0...3] (2000.00)

SI Mtn ax type CU p9502 (0)

SI Mtn ax type MM p9302 (0)

SI Mtn SLS lim CU 0.00...100000.00 [mm/min]
p9532[0...7] (1)

SI Mtn sp_pitch CU 0.1000...8388.0000 [mm]
p9520 (10.0000)

SI Mtn sp_pitch MM 0.1000...8388.0000 [mm]
p9320 (10.0000)

SI Mtn gear den CU p9521[0...7] (1)

SI Mtn gear den MM p9321[0...7] (1)

SI Mtn gear num CU p9522[0...7] (1)

SI Mtn gear num MM p9322[0...7] (1)

Pos_act_sign_chng p9516.1

Encoder rotating/linear
p9316.0

<1> Only for p9601.2/p9801.2 = 1.
<2> Only for p9306/p9506 = 0 or 3.
<3> Only for p9306/p9506 = 1.
<4> Only at drive via PROFIsafe
<5> Only at drive via TM54F or onboard interface for CU310-2.

<2> Only for p9950 (12.00 ms)
<3> Only for p9950 (10.0000 ms)
<4> Only for p9950 (100.0000 ms)
<5> Only for p9950 (1000.0000 ms)
<6> Only for p9950 (10000.0000 ms)
<7> Only for p9950 (100000.0000 ms)
<8> Only for p9950 (1000000.0000 ms)

Status of the SBR function
p9723.16

Safe Brake Ramp

Safe speed monitor
Safe acceleration monitor

Safe speed monitor

Safe acceleration monitor

Safe Brake Ramp

SI Mtn SLS lim CU 0.00...100000.00 [1/min]
p9531[0...3] (2000.00)

SI Mtn SLS lim MM 0.00...100000.00 [mm/min]
p9331[0...3] (2000.00)

SI Mtn SLS Gr CU 0.00...100000.00 [1/min]
p9531[0...3] (2000.00)

SI Mtn sp_pitch MM 0.1000...8388.0000 [mm]
p9320 (10.0000)

SI Mtn gear den MM p9321[0...7] (1)

SI Mtn gear num MM p9322[0...7] (1)

SI Mtn SLS lim MM 0.00...100000.00 [mm/min]
p9331[0...3] (2000.00)

SI Mtn ax type MM p9302 (0)

SI Mtn SLS set_lim 0.000...100.000 [%]
p9533 (80.000)

DO: SERVO, VECTOR
Fig. 2-93 2825 – SS1, SS2, SOS, Internal STOP B, C, D, F

Deselect STO

STOP B active

STOP D active

Deselect SOS

Deselect SS2

STOP C active

SI Extended Functions - SS1, SS2, SOS, Internal STOP B, C, D, F

SAM: Safe Acceleration Monitor
SBR: Safe Brake Ramp
SLS: Safely-Limited Speed
SOS: Safe Operating Stop
SS1: Safe Stop 1
SS2: Safe Stop 2
### Motion PROFINET control word

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Motion PROFINET control word</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = STO deselection</td>
</tr>
<tr>
<td>1</td>
<td>1 = SS1 deselection</td>
</tr>
<tr>
<td>2</td>
<td>1 = SS2 deselection</td>
</tr>
<tr>
<td>3</td>
<td>1 = SOS deselection</td>
</tr>
<tr>
<td>4</td>
<td>1 = SLS deselection</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>1 = SLP deselection</td>
</tr>
<tr>
<td>7</td>
<td>1/0 = Acknowledgement</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>1 = SLS selection bit 0 active</td>
</tr>
<tr>
<td>10</td>
<td>1 = SLS selection bit 1 active</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>1 = Deselect SDI positive</td>
</tr>
<tr>
<td>13</td>
<td>1 = Deselect SDI negative</td>
</tr>
<tr>
<td>14-18</td>
<td>Reserved</td>
</tr>
<tr>
<td>19</td>
<td>1 = Auswahl SLP</td>
</tr>
<tr>
<td>20-31</td>
<td>Reserviert</td>
</tr>
</tbody>
</table>

### Motion PROFINET status word

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Motion PROFINET status word</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0 = SLS1 1 = SLS2</td>
</tr>
<tr>
<td>2</td>
<td>1 = SLS3 2 = SLS4</td>
</tr>
<tr>
<td>3</td>
<td>1 = SOS active</td>
</tr>
<tr>
<td>4</td>
<td>1 = SLS active</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>1 = SLP active</td>
</tr>
<tr>
<td>7</td>
<td>1 = Not an internal event</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>1 = SLS stage active bit 0</td>
</tr>
<tr>
<td>10</td>
<td>1 = SLS stage active bit 1</td>
</tr>
<tr>
<td>11</td>
<td>1 = SOS selected</td>
</tr>
<tr>
<td>12</td>
<td>1 = SDI positive</td>
</tr>
<tr>
<td>13</td>
<td>1 = SDI negative</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>1 = SSM (Speed below limit)</td>
</tr>
<tr>
<td>16-18</td>
<td>Reserved</td>
</tr>
<tr>
<td>19</td>
<td>1 = SLP positioning range active 0 = SLS1 1 = SLS2</td>
</tr>
<tr>
<td>20-21</td>
<td>Reserved</td>
</tr>
<tr>
<td>22</td>
<td>1 = SP is valid</td>
</tr>
<tr>
<td>23</td>
<td>1 = Safely referenced</td>
</tr>
<tr>
<td>24-29</td>
<td>Reserved</td>
</tr>
<tr>
<td>30</td>
<td>1 = SLP upper limit maintained</td>
</tr>
<tr>
<td>31</td>
<td>1 = SLP lower limit maintained</td>
</tr>
</tbody>
</table>

---

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8
---

DO: SERVO, VECTOR

SI Extended Functions - Control word and status word

fp_2840_54_eng.vsd  Function diagram

15.11.11  V04.05.00  S120/S150/G130/G150

<1> Only at drive of the Extended Functions via TM54F or onboard interface for CU310-2.

<2> Only at drive of the Extended Functions via PROFINET.

<3> S_ZSW1.11 only at drive of the Extended Functions via TM54F or onboard interface for CU310-2 or S_ZSW2.29 only at drive of the Extended Functions via PROFINET.
Changing Safety parameters

Changing Safety parameters

Safety parameterization enable

Password entry

Safe integrated commissioning
p0010 = 95

SI password input
p9761

SI password new
p9762

SI acknowledge password
p9763

Effective password

SI parameter
p9300 ... p9399
p9500 ... p9599 can be changed

SI parameter

Check sum check for Safety parameters

Resetting safety parameters

SI Mtn enable MM
p9301 = 0

SI Mtn enable fct
p9501 = 0

SI enable fct CU
p9601 = 0

SI enable fct MM
p9801 = 0

Quit Safety commissioning mode

p0010 = 95

<1> Comparator, see [1021].

<2> Analog signal memory, see [1021].

<3> The target checksum must be equal to the actual check sum.

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters

Changing Safety parameters
Changing Safety parameters

Safety parameterization enable

Password entry

Effective password

Comparator, see [1021].

Checksum check for Safety parameters

The target checksum must be equal to the actual check sum.

Safety parameter

p10000 … p10099 can be reset to factory settings via p0970

Disabling Safety functions

Resetting safety parameters

Safety parameters p10000 … p10099 are valid after POWER ON

<1> Comparator, see [1021].

<2> Analog signal memory, see [1021].

<3> The target checksum must be equal to the actual check sum.

1 2 3 4 5 6 7 8
DO: TM54F_MA, TM54F_SL

fp_2847_51_eng.vsd

Function diagram

- 2847 -

SI Extended Functions - Parameter manager

15.11.11 V04.05.00

SINAMICS
Function diagrams

Fig. 2-97  2848 – TM54F configuration, F-DI/F-DO test

SINAMICS
15.11.11 V04.05.00
Function diagram

SI Extended Functions - TM54F Configuration, F-DIF-DO Test

Drive group assignment

- Test F-DI
- Test F-DO

SI FrcdCkProcTimer
0.00...8760.00 [h]
p10003 (8.00)

SI FcP F-DO S_q

Test F-DI

Test F-DO

SI F-DI enab test

SI test sens FS

Test stop

Restart timer (on successful test stop)

R10053.0 DI 20
R10053.1 DI 21
R10053.2 DI 22
R10053.3 DI 23

Drive 1
Drive 2
Drive 3
Drive 4
Drive 5
Drive 6

A35012
"Test stop end" F35013 "Test stop error"

A35014 "Test stop required"

fp_2848_51_eng.vsd

DO: TM54F_MA, TM54F_SL

Drive group 1
Drive group 2
Drive group 3
Drive group 4

p10011[0] (1)
p10011[1] (1)
p10011[2] (1)
p10011[3] (1)
p10011[4] (1)
p10011[5] (1)
Fig. 2-101 2855 – TM54F control interface (p9601.2 = 1 & p9601.3 = 0)

**Function diagrams**

DO: TM54F_MA, TM54F_SL

SI Extended Functions - TM54F control interface (p9601.2 = 1 & p9601.3 = 0)

fp_2855_51_eng.vsd
Fig. 2-102 2856 – TM54F Safe State selection

Drive group 1 Power_removed
Drive group 1 SS1_active
Drive group 1 SS2_active
Drive group 1 SOS_active
Drive group 1 SLS_active
Drive group 1 SDI_pos_active
Drive group 1 SDI_neg_active

Drive group 2 Power_removed
Drive group 2 SS1_active
Drive group 2 SS2_active
Drive group 2 SOS_active
Drive group 2 SLS_active
Drive group 2 SDI_pos_active
Drive group 2 SDI_neg_active

Drive group 3 Power_removed
Drive group 3 SS1_active
Drive group 3 SS2_active
Drive group 3 SOS_active
Drive group 3 SLS_active
Drive group 3 SDI_pos_active
Drive group 3 SDI_neg_active

Drive group 4 Power_removed
Drive group 4 SS1_active
Drive group 4 SS2_active
Drive group 4 SOS_active
Drive group 4 SLS_active
Drive group 4 SDI_pos_active
Drive group 4 SDI_neg_active

SI Safe State selection

p10039[0].6
p10039[1].6
p10039[2].6
p10039[3].6

Drive group 1 Safe State
Drive group 2 Safe State
Drive group 3 Safe State
Drive group 4 Safe State

p10000 (12.00 ms)
Fig. 2-103 2857 – TM54F assignment (F-DO 0 ... F-DO 3)

- 2857 -

DO: TM54F_MA, TM54F_SL

SI Extended Functions - TM54F assignment (F-DO 0 ... F-DO 3)

fp_2857_51_eng.vsd
<1> Only for p9506 = 1 or 3 “Safety without encoder”.

<table>
<thead>
<tr>
<th>Function diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fig. 2-104 2860 - SSM (Safe Speed Monitor)</td>
</tr>
</tbody>
</table>

**DO: SERVO, VECTOR**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SI Extended Functions - SSM (Safe Speed Monitor)</td>
<td>fp_2860_54_eng.vsd</td>
<td>Function diagram</td>
<td>- 2860 -</td>
<td>14.11.11 V04.05.00</td>
<td>S120/S150/G130/G150</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Function diagrams

Fig. 2-105  2861 – SDI (Safe Direction)

--- | --- | --- | ---
SDI positive | p1082 | 0 | [p1082]
SDI negative | 0 | -p1082 | [p1082]
SDI positive + SLSx | p9531[a] x p9533 | 0 | [p9531[a] x p9533]
SDI negative + SLSx | 0 | -p9531[a] x p9533 | [p9531[a] x p9533]

<1> Only for p9506 = 1 or 3 "Safety without encoder".

<2>
## 2.12 Setpoint channel

### Function diagrams

<table>
<thead>
<tr>
<th>Function Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>3010</td>
<td>Fixed speed setpoints</td>
<td>2-1097</td>
</tr>
<tr>
<td>3020</td>
<td>Motorized potentiometer</td>
<td>2-1098</td>
</tr>
<tr>
<td>3030</td>
<td>Main/supplementary setpoint, setpoint scaling, jogging</td>
<td>2-1099</td>
</tr>
<tr>
<td>3040</td>
<td>Direction limitation and direction reversal</td>
<td>2-1100</td>
</tr>
<tr>
<td>3050</td>
<td>Skip frequency bands and speed limitations</td>
<td>2-1101</td>
</tr>
<tr>
<td>3060</td>
<td>Basic ramp-function generator</td>
<td>2-1102</td>
</tr>
<tr>
<td>3070</td>
<td>Extended ramp-function generator</td>
<td>2-1103</td>
</tr>
<tr>
<td>3080</td>
<td>Ramp-function generator selection, status word, tracking</td>
<td>2-1104</td>
</tr>
</tbody>
</table>
Fig. 2-106  

Setpoint channel - Fixed speed setpoints

From control word setpoint channel

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL</td>
<td>fp_3010_51_eng.vsd</td>
<td>Function diagram</td>
<td>- 3010 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Setpoint channel - Fixed speed setpoints

Fixed speed setpoint channel

-3010 - Fixed speed setpoints

-3010 - Fixed speed setpoint number actual

0.00

0 0 0 0

p1051[D] (0.000)
p1002[D] (0.000)
p1003[D] (0.000)
p1004[D] (0.000)
p1005[D] (0.000)
p1006[D] (0.000)
p1007[D] (0.000)
p1008[D] (0.000)
p1009[D] (0.000)
p1010[D] (0.000)
p1011[D] (0.000)
p1012[D] (0.000)
p1013[D] (0.000)
p1014[D] (0.000)
p1015[D] (0.000)

p1020
p1021
p1022
p1023

p1197

r1198.0
r1198.1
r1198.2
r1198.3

Fixed speed setpoint selection bit 0
Fixed speed setpoint selection bit 1
Fixed speed setpoint selection bit 2
Fixed speed setpoint selection bit 3

For SERVO, the following applies:
Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).

Pre-assignment of the sampling times in p0115, refer to p0112.

Refer to [1020.7]

p0115[3]
Function diagram

Setpoint channel - Motorized potentiometer

Mop configuration
- p1030[0110] (0000...0111)
- p1030[0110] (0000...0111)
- p1030[0110] (0000...0111)
- p1030[0110] (0000...0111)

Mop raise
- p1035
- p1035
- p1035
- p1035

Mop lower
- p1036
- p1036
- p1036
- p1036

Mop inversion
- p1039[0] (0)
- p1039[0] (0)
- p1039[0] (0)
- p1039[0] (0)

Mop auto setpoint
- p1042[0] (0)
- p1042[0] (0)
- p1042[0] (0)
- p1042[0] (0)

Mop manual/auto
- p1041[0] (0)
- p1041[0] (0)
- p1041[0] (0)
- p1041[0] (0)

Mop n_max
- 210 000.000...210 000.000 [RPM] p1037[0] (n_max_Mot)
- 210 000.000...210 000.000 [RPM] p1037[0] (n_max_Mot)
- 210 000.000...210 000.000 [RPM] p1037[0] (n_max_Mot)
- 210 000.000...210 000.000 [RPM] p1037[0] (n_max_Mot)

Mop n_min
- 210 000.000...210 000.000 [RPM] p1038[0] (n_min_Mot)
- 210 000.000...210 000.000 [RPM] p1038[0] (n_min_Mot)
- 210 000.000...210 000.000 [RPM] p1038[0] (n_min_Mot)
- 210 000.000...210 000.000 [RPM] p1038[0] (n_min_Mot)

Mop start value
- 210 000.000...210 000.000 [RPM] p1040[0] (0.000)
- 210 000.000...210 000.000 [RPM] p1040[0] (0.000)
- 210 000.000...210 000.000 [RPM] p1040[0] (0.000)
- 210 000.000...210 000.000 [RPM] p1040[0] (0.000)

Mop setting value
- p1044[0] (0)
- p1044[0] (0)
- p1044[0] (0)
- p1044[0] (0)

Mop accept set val
- p1043[0] (0)
- p1043[0] (0)
- p1043[0] (0)
- p1043[0] (0)

Mop ramp-up time
- 0.0...1 000.0 [s] p1047[0] (10.0)
- 0.0...1 000.0 [s] p1047[0] (10.0)
- 0.0...1 000.0 [s] p1047[0] (10.0)
- 0.0...1 000.0 [s] p1047[0] (10.0)

Mop ramp-down time
- 0.0...1 000.0 [s] p1048[0] (10.0)
- 0.0...1 000.0 [s] p1048[0] (10.0)
- 0.0...1 000.0 [s] p1048[0] (10.0)
- 0.0...1 000.0 [s] p1048[0] (10.0)

<p115[3]>
Refer to [1020.7]

<p100>
<1> For automatic commissioning, p1037 and p1038 are set to the maximum motor speed or to the rated motor speed, provided that n_max_mot has not been specified.

</p101>
<2> If initial rounding-off is active (p1030.2 = 1), the selected ramp-up/down times are exceeded accordingly.

<3> Only effective if p1030.0 = 0.

<100> For SERVO, the following applies: Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).

<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.
Fig. 2-108 3030 – Main/supplementary setpoint, setpoint scaling, jogging

AOP30

<1> AOP30 not at SINAMICS SM150.

<2> Only active in LOCAL mode (r0807.0 = 1) [2501.2].

<3> Jogging can only be activated in the following operating states (sequencer see [2610]):
- For SERVO and VECTOR: In the "Ready to start (S2)" operating state.
- For VECTORGL and VECTORMV: In the "Operation (S4)" operating state.

<4> Only if control priority is with control panel with speed setpoint input.

<5> With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).

<100> For SERVO, the following applies: Only if the function module "extended setpoint channel" is activated (r0108.8 = 1).

<101> To view the pre-assignment of the sampling times in p0115, refer to p0112.
DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL

Setpoint channel - Direction limitation and direction reversal

fp_3040_51_eng.vsd

Function diagram

- 3040 -
A suppression speed of "0" de-activates the suppression speed bandwidth.

If the drive is not stopped via the input setpoint, but via controlled intervention, the lower hysteresis branch is relevant after a subsequent run-up.

For SERVO, the following applies: Only if the function module "Extended Stop and Retract" is activated (r0108.9 = 1).

For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated (r0108.8 = 1). For r0108.8 = 0, [3095] applies for the generation of the speed limits.

To view the pre-assignment of the sampling times in p0115, refer to p0112.
**Setpoint channel - Basic ramp-function generator**

For SERVO and VECTOR, the following applies: Inhibited during jogging.

Not at S150/G130/G150.

After a 0/1 signal a ramp-up is started again.

With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).

For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated.

To view the pre-assignment of the sampling times in p0115, refer to p0112.

**Function diagram**

Fig. 2-111 3060 – Basic ramp-function generator

- Ramp-up time: 0.000...999 999.000 s (p1120[D] (10.000))
- Ramp-down time: 0.000...999 999.000 s (p1121[D] (10.000))
- OFF3 ramp-down time: 0.000...600.000 s (p1135[D] (0.000))

- Up ramp scaling: (1)
- Down ramp scaling: (1)
- Ramp flattening-off: (1)
- Freeze ramp-function generator: (1)
- RFG setpt at input (1)
- From the setpoint limiting (1)
- Accept RFG set val:<1>
- RFG setting value (1)
- Threshold for "Ramp-up/ramp-down active": 0.00...1500.00 RPM (p1148[D] (19.80))
- Ramp function generator, status bits

**Notes:**
- For SERVO and VECTOR, the following applies: Inhibited during jogging.
- Not at S150/G130/G150.
- After a 0/1 signal a ramp-up is started again.
- With simultaneous jog 1 and 2 (p1055 = p1056 = 1) the last setpoint remains effective (Freeze ramp-function generator).
- For SERVO, the following applies: Only if the function module "Extended setpoint channel" is activated.
- To view the pre-assignment of the sampling times in p0115, refer to p0112.
Fig. 2-112  
3070 – Extended ramp-function generator

- Setpoint channel
- Extended ramp-function generator

---

**Function Diagrams**

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**SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A**
<1> For \( p1145 > 0 \), ramp-function generator tracking is activated when the torque limiting responds. This means that the speed controller output only exceeds the torque limit by a deviation that can be set via \( p1145 \).

<2> For OFF1/OFF3, the ramp-function generator ramp is active. The ramp-function generator is set (SERVO: to the actual value, VECTOR, VECTORGL, VECTORMV, VECTORSL: to the setpoint \( r1170 \)) and stops the drive with the ramp-downtime (\( p1160 \)).

<3> The interpolator is only active with activated "basic positioner" Function Module or with isochronous PROFIdrive mode and sign of life received by the master (STW2.12 ... STW2.15).

<4> Behavior of the response ramp of the torque limiting:

- \( p1145 = 0.0 \): No ramp-function generator tracking. The ramp-function generator ramp is no longer in the range of the speed actual value.
- \( p1145 > 1.0 \): The ramp-function generator ramp remains as close as possible to the speed actual value.

\[ p1145 = 1.0 \] The ramp-function generator ramp is steeper than for \( p1145 = 1.0 \) (higher "speed following error").

<5> The value is displayed correctly only with \( \text{r0899.2} = 1 \) (Operation enabled).

<6> For SERVO only.

<7> For VECTOR, VECTORMV only.

<8> For VECTORGL only.

<101> To view the pre-assignment of the sampling times in \( p0115 \), refer to \( p0112 \).
2.13 Encoder evaluation

Function diagrams

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Encoder evaluation - Raw signal sensing

For rotary encoders = pulse number setting.
For resolvers = pole pair number setting.

1. Encoder type selection
   \( p0400 \)\[E\]
   \( 0 = \) No encoder
   \( \leq 97 = \) encoder settings

2. Encoder configuration
   \( p0404 \)\[E\]
   \( \leq 97 = \) encoder settings

3. Encoder squarewave A/B
   \( p0405 \)\[E\]
   \( \leq 97 = \) encoder settings

4. Encoder pulse number
   \( p0409 \)\[E\]
   \( \leq 97 = \) encoder settings

5. Encoder rot clearance ZM
   \( p0425 \)\[E\]
   \( \leq 97 = \) encoder settings

6. Configuration, absolute value encoder
   \( p0421 \)\[E\]
   \( \leq 97 = \) encoder settings
   \( p0422 \)\[E\]
   \( \leq 97 = \) encoder settings
   \( p0423 \)\[E\]
   \( \leq 97 = \) encoder settings

7. SM characteristics
   \( r0458 \)\[E\]
   \( \leq 97 = \) encoder settings

8. Raw position signals
   \( p0492 \)
   \( \leq 97 = \) encoder settings

9. Configuration, absolute value encoder
   \( p0142 \)\[E\]
   \( \leq 97 = \) encoder settings

For SSI encoders: Absolute position information

For rotary encoders = pulse number setting.
For resolvers = pole pair number setting.

<1> For rotary encoders = pulse number setting.
<2> \( p0142 \) = \( p0141 \) for motors with DRIVE-CLiq.
<3> These parameters are automatically set.
Fig. 2-115 4715 – Speed actual value and pole position sensing, motor encoder ASM/SM (encoder 1)

Induction motor and synchronous motor

Only for synchronous motor

Encoder evaluation - Speed act. value and pole pos. sensing, motor enc. ASM/SM (encoder 1)

To basic braking control [2701.1]
To extended braking control [2704.1] <7>
To speed controller with/without encoder [6040.1]
To Kp_n-/Tn_n adaptation <11> p1699 = 1 allows to import the filter parameter settings on the controller.
To current/power/torque limits [6640.1]
To iq and Id controllers [6741.7]
To field-weakening characteristic [6721.1] <7> (6724.1)
To motor model select [6733.1] <6>
To display signals [6799.1]
To speed signals [6810.1]
To interface to the Motor Module [6830.1] <7>

-1 0 1

T_smth display
0.00...200.00 [ms] p0045 (1.00)

fn_z p1680[D]
fn n p1679[D]
D n p1676[D]
D z p1681[D]

n_act calculation

n_act smoothed with p0045

1 = Sensorless operation active

fn n p1678[D]

fn z

2nd Order Filter

p1655[D].4

<11> = Only for vector control without encoder.
<2> [E]: The encoder data set changeover is represented on [8570].
<3> Only for operation with encoder and PEM.
<4> Only for S120/S150.
<5> Only for S120/S150 and p0300 = 2, 5
<6> Only for FEM.
<7> Only with induction motor (ASM).
<8> General 2nd order filter (detailed representation on [1022]).
<9> PT2 low pass (detailed representation on [1022]).
<10> The frequency is multiplied by this factor.
<11> p1699 = 1 allows to import the filter parameter settings on the controller.
### 2.14 Vector control

#### Function diagrams

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</table>
Function diagrams

Fig. 2-116 6030 – Speed setpoint, droop

<1> = Only for vector control without encoder.
<2> Only for p1488 > 0.
<3> Scaling: p1488 = 0.100 - for a rated motor torque of r0333 - results in a speed setpoint reduction of 0.1 x p0311.
<4> The value is displayed correctly only with r0899.2 = 1 (Operation enabled).
<5> p1488 = 1 Not recommended with active acceleration calculation [6031].

Mot moment of inertia ratio Mot M_inertia
1.000...10000.000 0.00000...1000000.00000 [kgm²]
p0342[M] (1.000) p0341[M] (0.000)
Mom of inert scal 0.0...400.0 [\%]
p1497[C] (100)

Pre-control speed

p1400.15 n_prectrl motormod

Enable droop
p1406.11 n_ctr setp sum

n_set before filter
p0060
n_set limited
p1407.11
n_set after filter
p0062

M_ctrl active
p1407.2
M_set before M_supp
p0078
M_set total
p0079

Vector control - Speed setpoint, droop
Fig. 2-117 6031 – Pre-control balancing, reference/acceleration model

Function diagrams

Acceleration calculation

Acceleration Model

Pre-control balancing

Reference model

Steady-state setpoint calculation

Mot M_inertia
0.00000...10000.00000 [kgm²]
p0341[M](0.00000)

Mot moment of inertia ratio
1.000...10000.000
p0342[M](1.000)

a_before scaling
0.0...10 000.0 [%]
p1496[D](0.0)

Accleration Model
p1400[D].20 = 0
or
p1400[D].3 = 0 and p1496[D] > 0

Sampling time, closed-loop speed control (p0115[1])
0.00...8000.00 [Hz]
p1433[D](0.00)

Mom of inert scal
Mom of inert total
p1497[C](100)

Mom of inert total
n_set smooth

p1400[D].3

p0115[1] (Motor Modules)

Reference model, speed setpoint I component
p1400[D].3

Steady-state setpoint calculation

n_set via PC
PcCtrl active
n_set smooth

n_set pos eff
n_set neg eff

n_limit pos eff
n_limit neg eff

n_set via PC
PcCtrl active
n_set smooth

<1> p1426 only effective for p1400[D].2 = 1 or p1428 > 2.0
<2> p1429 only effective for p1400[D].2 = 1.
For p1400[D].2 = 0 the following applies: p1442[D] or p1452[D] for sensorless operation is effective (6040.2).
Fig. 2-118  6040 – Speed controller with/without encoder

DO: VECTOR, VECTORGL, VECTORMV, VECTORSL

Vector control - Speed controller with/without encoder

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Free Kp_n adaptation

Adapt_factor upper
0.0...200 000.0 %

n_ctrl adapt Kp upper
p1458(D) (100.0)

Adapt_factor lower
0.0...200 000.0 %

n_ctrl adapt Kp lower
p1458(D) (100.0)

Free Tn adaptation active (p1400.6)

<1> If the lower transition point exceeds the upper transition point, the Kp-adaptation also changes over.

Speed-dependent Kp_n/Tn_n adaptation

n_act unsmoothed

n_ctrl Kp scal

n_ctrl Kp_n upper
p1461(D) (100.0)

0.00...200 000.00 %

n_ctrl Tn_n upper
p1463(D) (100.0)

0.00...200 000.00 %

n_ctrl Kp scal

To the speed controller [6040.4]

Kp_n_basic (p1460, p1470)

Kp_n_adapt

To the speed controller [6040.4]

Tn_n_basic (p1462, p1472)

Tn_n_adapt

<1> If the lower transition point exceeds the upper transition point, the Kp-adaptation also changes over.

Free Tn adaptation active (p1400.6)
Fig. 2-120 6060 – Torque setpoint

- Vector control - Torque setpoint

- Function diagrams

1. Calculated accelerating torque
2. Torque control active
3. Torque limiting upper active
4. Torque limiting lower active
5. Current/torque limit active

- Model: DO: VECTOR, VECTORGL, VECTORMV, VECTORSL

- fp_6060_51_eng.vsd

- 31.03.10 V04.05.00

- SINAMICS
Fig. 2-121  6220 – Vdc_max controller and Vdc_min controller

Vdc_max (ctrl)

Vdc_max SenseOnLev p1254
Supply voltage p0210
Vdc_max on_level p1245[D]
Calculate on_level
Vdc_max on_level r1242
Vdc_ctrl config p1240[D]
Vdc_ctrl Kp p1250[D]
Vdc_ctrl Tn p1251[D]
Vdc_ctrl t_rate p1252[D]
Vdc_ctrl dyn_factor p1243[D]
Vdc_max dyn_factor p1246
Vdc_max (ctrl)

Vdc_min (ctrl)

Vdc_min SenseOnLev p1245
Supply voltage p0210
Vdc_min on_level p1244[D]
Calculate on_level
Vdc_min on_level r1246
Vdc_ctrl config p1240[D]
Vdc_ctrl Kp p1250[D]
Vdc_ctrl Tn p1251[D]
Vdc_ctrl t_rate p1252[D]
Vdc_ctrl dyn_factor p1247[D]
Vdc_min dyn_factor p1247[D]
Vdc_min (ctrl)

<1> p1240[D]
0: Inhib Vdc ctrl
1: Vdc_max controller enable
2: Vdc_min controller (kinetic buffering) enable
3: Vdc_min controller and Vdc_max controller enable
4: Vdc_Activates Vdc_max monitoring
5: Vdc_Activates Vdc_min monitoring
6: Vdc_Activates Vdc_min monitoring and Vdc_max monitoring

<2> The Vdc controller is switched on when reaching the threshold value. The switch-off hysteresis is 5% of the switch-on level.

<3> Only for VECTOR and if the "technology controller" function module is active (r0108.16 = 1).

<4> As standard, the controller is designed as a P controller.

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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<td>- 6220 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Function diagrams**

**Vector control - U/f characteristic and voltage boost**

- Linear
- Flux current control (FCC)
- Dependent on the load current

**Control type**

- DO: VECTOR
- S120/S150/G130/G150

**Parameters**

- V_output max r0071
- Mot V_rated p0304
- Mot f_rated p0310
- f_set
- V_boost perm p1310[D]
- Ramp-up active r1199.0
- [3080.8]
- V_boost accel p1311[D]
- V_boost starting p1312[D]
- Acceleration voltage active r0056.6
- r0305
- r0305
- r0305
- mot_f_rated
- r0310
- r0395
- Voltage boost when starting r0056.5
- V_boost total p1315
- V_boost accel p1311[D]
- U/I V_set independ. p1330[C]
- U/I FCC f_Start p1333
- U/I V_output max r0071
- Mot V_rated p0304
- Mot f_rated p0310
- V_boost total p1315
- V_boost accel p1311[D]
- U/I V_output max r0071
- Mot V_rated p0304
- Mot f_rated p0310

**Notes**

- For p1320 = 0, the voltage boost via p1310 is not effective.
- p1312 is only effective when acceleration takes place for the first time after pulse enable.

**References**

- Refer to [1020.7]
- [1690.4]
- [3080.8]

**Function diagram**

- fp_6300_54_eng.vsd
- Function diagram - 6300 -
Fig. 2-123  6310 – Resonance damping and slip compensation

Vector control - Resonance damping and slip compensation

1. \( U/f \) resonance damping
2. \( U/f \) slip compensation
3. Slip comp scal
4. Slip comp lim val
5. \( f/f \) Mot N
6. \( f/f \) Mot N
7. Brake f_start
8. Slip comp act val

- If \( p1349 = 0 \): the limit is \( 0.95 \times f \) Mot N <= 45 Hz.
- Preset value for \( p1337 \): Activation with \( r0056 = 1 \) till \( p1338 \) and \( p1334 \) has expired.

Refer to \[1020.7\] p0115 \[1\] (Motor Modules)

- \( 250 \) ms
- \[1690.6\]
- \[1690.7\]
- \[1690.8\]
Vector control - Vdc_max controller and Vdc_min controller (U/f)

<1> p1280[0]
0: Inhib Vdc ctrl
1: Enables Vdc_max controller
2: Enables Vdc_min controller
3: Enables Vdc_min monitoring and Vdc_max controller
4: Activates Vdc_min monitoring
5: Activates Vdc_max monitoring
6: Activates Vdc_min monitoring and Vdc_max monitoring

<2> As standard the controller is designed as a P controller.

<3> The switch-off hysteresis is 5% of the switch-on level.

The Vdc controller is switched on when reaching the threshold value. The switch-off hysteresis is 5% of the switch-on level.
### Speed control configuration

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<th>Bit No.</th>
<th>Meaning</th>
<th>Factory setting</th>
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<tr>
<td>0</td>
<td>1 = Automatic Kp/Tn adaptation active</td>
<td>[6040.3]</td>
</tr>
<tr>
<td>1</td>
<td>1 = Sensorless vector control, freeze I component</td>
<td>[6040.3]</td>
</tr>
<tr>
<td>2</td>
<td>1 = Acceleration pre-control, external source (p1495) 0 = Acceleration pre-control, internal source (n_set)</td>
<td>[6031.2]</td>
</tr>
<tr>
<td>3</td>
<td>1 = Reference model, speed setpoint I component ON</td>
<td>[6031.1][6031.7]</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 = Kp/Tn adaptation active</td>
<td>[6040.3]</td>
</tr>
<tr>
<td>6</td>
<td>1 = Free Tn adaptation active</td>
<td>[6050.6]</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
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<tr>
<td>12</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 = Torque pre-control always active 0 = Torque pre-control for n_ctrl enabled</td>
<td>[6060.4]</td>
</tr>
<tr>
<td>15</td>
<td>1 = Sensorless vector control, speed pre-control active</td>
<td>[6030.5]</td>
</tr>
</tbody>
</table>

**Refer to** [1020.7] p0115[1] (Motor Modules)

<table>
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<tr>
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<th>fp_6490_51_eng.vsd</th>
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<td>29.06.09   V04.05.00</td>
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</tbody>
</table>
Flux control, configuration

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<thead>
<tr>
<th>Bit No.</th>
<th>Meaning</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Flux setpoint, soft starting active</td>
<td>0 [8722.3]</td>
</tr>
<tr>
<td>1</td>
<td>1 = Flux setpoint, differentiation active</td>
<td>1 [8723.7]</td>
</tr>
<tr>
<td>2</td>
<td>1 = Flux build-up control active</td>
<td>1 [8723.6]</td>
</tr>
<tr>
<td>3</td>
<td>1 = Flux characteristic, load-dependent</td>
<td>1 [8726.2]</td>
</tr>
<tr>
<td>4</td>
<td>1 = Flux controller (ASM with encoder)</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1 = Flux impression with model chngov (ASM with encoder)</td>
<td>1 [8622.5]</td>
</tr>
<tr>
<td>6</td>
<td>1 = Quick magnetizing</td>
<td>1</td>
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<td>15</td>
<td>Reserved</td>
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</tbody>
</table>

Refer to [1020.7] p0115(2) (Motor Modules)

Vector control - Flux control configuration

p1401[D]
Upper torque limit

-1 000 000.00...20 000 000.00 [Nm]

p1520\[D\] (0.00)

M_max upper

-2 000.0...2 000.0 [%]

p1524\[D\] (100.0)

M_max upper scal

Example:
0 = Fast stop active (OFF3)

M_lim var/fix S_src

p1551\[C\]

Diefe 19.08.09 V04.05.00

Refer to [1020.7]

Lower torque limit

-20 000 000.00...1 000 000.00 [Nm]

p1521\[D\] (0.00)

M_max lower

-2 000.0...2 000.0 [%]

p1525\[D\] (100.0)

M_max lower scal

M_max up w/o offs [Nm]

p1526 [6640.1]

M_max low w/o offs [Nm]

p1527 [6640.1]

<1> Danger: Negative values at A or positive values at B represent a minimum torque for the other torque direction and can cause the motor to accelerate uncontrollably.
Fig. 2-128  Current/power/torque limits

Vector control - Current/power/torque limits

DO: VECTOR

S120/S150/G130/G150

11.11.11 V04.05.00

Vector control - Current/power/torque limits

Current limiting

Power limiting

Speed limiting

Pre-control

Current limiting var

P Max

Speed limiting

Controller

Intervention by the Vdc controller.

Intervention when the speed limit is exceeded + 2 % n rated.

P1555 = 0 switches the evaluation of the connector input P1555 off.

Only for SINAMICS S120/S150.

Ony for PEM.
Vector control - Current setpoint filter

Filter 1
- General 2nd-order filter (detailed representation at [1022]).
- 2nd order low pass (detailed representation at [1022]).
- The frequency is multiplied by this factor.
- Only for SINAMICS S120/S150.

Filter 2
- Frequency negative
- With p1699 = 1, the parameter settings are transferred to the controller.
- Only for SINAMICS S120/S150.
Fig. 2-130 6714 – Iq and Id controller

Pre-control, de-coupling and limiting

- Vector control - Iq and Id controllers
- Function diagrams
- DO: VECTOR
- SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

<1> [6723.1] <2> [6721.6] <3> [6727.6] p0393[M]
<1> [6710.8] p077
<1> [6730.1] <2> [6731.5] <3> [6732.1]
<1> [6723.1] <2> [6724.1] <3> [6725.1] <3> [6726.8]

- For induction motors.
- For synchronous motors.
- Only for SINAMIC S120/S150 and separately-excited synchronous motors.

- Mot L_leakage total r0377[M]
- Flux setpoint total r1598
- Flux setpoint pre-ctrl
- Isd_ctrl_scal p1702[D]
- Quad_de-couple scal p1703
- Iq_act r0078
- Iq_set r0077
- l_set

- Id_set
- Kp_I_Tn_I
- Kp_I
- p0392[M] p0391[M]
- p0393[M]
- Kp_I
- Id_set
- ld_ctrl_pre-ctrl active
- p0115[M] (Motor Modules)
- f_output
- Isq_ctrl I_limit r1725

- Id_current_controller
- Isq_ctrl I_comp r1724

- U_quad_de-couple r1729
- U_dir_axis_de-couple r1728

- EMF scal Isq_ctrl p1704[D]
- Isq_ctrl_pre-ctrl scal p1703
- Isd_ctrl I_l_limit r1725
- Id_control, I component limiting

- p0086
- f_output
- U_dir_axis_set r1732
- U_set

- Voltage limit active r0056.9
- Voltage limiting r1408.3

- Coordinate converter
- U_set
- U_angle
- U_quad_set r1732
- Id_outputs r1723

- U_dir_axis_set
- U_set
- U_angle
- U_quad_set

- Transv_decpl scal r1726
- Isq_reg Ausg
- U_quad_set

- Transfomat_angle
- U_set 1
- U_set 2
- U_set 3

- Id_reg
- U_quad
- Kp_I adaption
- p0392[M]
- p0391[M]
- p0393[M]

- I_ctrl Kp p1715[D]
- Id_set
- I_ctrl Kp p1715[D]
- I_ctrl Kp p1715[D]

- Kp_I
- Kp_I
- Kp_I

- I_ctrl Kp p1715[D]
- I_ctrl Kp p1715[D]
- I_ctrl Kp p1715[D]

- Id_reg
- U_quad
- Kp_I

- I_ctrl Kp p1715[D]
- I_ctrl Kp p1715[D]
- I_ctrl Kp p1715[D]
Fig. 2-131  
6721 – Id setpoint (PEM, p0300 = 2)
DO: VECTOR

Vector control - Field weakening characteristic, Id setpoint (ASM, p0300 = 1)

ASM: Induction motor

<1> Only for vector control without encoder (SLVC).

Function diagrams

Fig. 2-132: Vector control - Field weakening characteristic, Id setpoint (ASM, p0300 = 1)
Fig. 2-134  6724 - Field weakening controller (PEM, p0300 = 2)

Function diagram

- 6724 -
DO: VECTOR
Vector control - Interface to the Motor Module (ASM, p0300 = 1)
Fig. 2-136  6731 – Interface to the Motor Module (PEM, p0300 = 2)

Control Unit

- DO: VECTOR
- Refer to [1020.7]

Motor Module

- DC link voltage
- Pulse enable
- VW
- PWM
- + BRP
- - BRN
- U
- M
- BRAKE

Function diagrams

Vector control - Interface to the Motor Module (PEM, p0300 = 2)
2.15 Technology functions

Function diagrams

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<td>Friction characteristic</td>
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<td>7014</td>
<td>External Armature Short-Circuit (EASC, p0300 = 2xx or 4xx)</td>
<td>2-1133</td>
</tr>
<tr>
<td>7016</td>
<td>Internal Armature Short-Circuit (IASC, p0300 = 2xx or 4xx)</td>
<td>2-1134</td>
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<td>7017</td>
<td>DC braking (p0300 = 1xx)</td>
<td>2-1135</td>
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<tr>
<td>7020</td>
<td>Synchronization</td>
<td>2-1136</td>
</tr>
</tbody>
</table>
Function diagrams

Technology functions - Friction characteristic

Record friction characteristic

- Friction rec t_warm
  0.000...3600.000 [s] p3847[D] (0.000)

- Friction rec act
  0...3 p3845 (0) <1>

Drive ON from the sequence control

Friction characteristic record active (p3845 > 0)

To setpoint channel [3080.7]

Friction characteristic positive direction

Friction characteristic OK r3840.0

Friction characteristic record completed

Friction characteristic record aborted

Friction characteristic record activated

Friction characteristic record interrupted

Play friction characteristic

M [Nm]

n [RPM]

Friction M0 p3830[D] (0)

Friction M9 p3836[D] (0)

Friction characteristic record active (p3845 > 0)

Friction characteristic incorrect A07960

Friction characteristic record interrupted F07963

Friction characteristic record activated r3840.1

Friction characteristic record completed r3840.2

Friction characteristic record aborted r3840.3

Friction characteristic record deactivated p0115[3] (Drive Object)

M_max upper eff

M_max lower eff

M_max offset

n_act smooth

n_act unsmoothed

p3845

<1>

<2>

<2>

<2>

<2>

<2>

Friction characteristic record deactivated = 0

Friction characteristic record activated for all directions = 1

Friction characteristic record activated for positive direction = 2

Friction characteristic record activated for negative direction = 3

<2> Only for SINAMICS S120 and SERVO.

<2> p3845

= 0: Friction characteristic record deactivated

= 1: Friction char record activated for all directions

= 2: Friction char record activated for positive direction

= 3: Friction char record activated for negative direction

<2> Only for SINAMICS S120 and SERVO.

Table

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<th>Technology functions - Friction characteristic</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: SERVO, VECTOR (n/M), VECTORMV</td>
<td>Function diagram</td>
</tr>
</tbody>
</table>
Fig. 2-139 7014 – External Armature Short-Circuit (EASC, p0300 = 2xx or 4xx)

- Technology functions - External Armature Short-Circuit (EASC, p0300 = 2xx or 4xx)

<table>
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<tbody>
<tr>
<td><strong>DO:</strong> SERVO, VECTOR</td>
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<td></td>
<td></td>
<td></td>
<td><strong>fp_7014_54_eng.vsd</strong></td>
<td><strong>Function diagram</strong></td>
<td>- 7014 -</td>
</tr>
</tbody>
</table>

Technology functions - External Armature Short-Circuit (EASC, p0300 = 2xx or 4xx)

- EASC: External Armature Short-Circuit
- p0300 = 4xx only with S120/S150.

**Function diagrams**
- Technology functions
Fig. 2-140  7016 – Internal Armature Short-Circuit (IASC, p0300 = 2xx or 4xx)

Technology functions - Internal Armature Short-Circuit (IASC, p0300 = 2xx or 4xx)

DO: SERVO, VECTOR

Function diagram

Fault response, Internal Armature Short-Circuit

"Motor terminals are not at zero potential after pulse cancellation"

F07807

Motor Module

Control Unit

Control of armature short-circuiting in the power unit

Armature short-circuit, enable missing

r0046.4

p1230

≥1

ASC act

Armature short-circuit, internal enable missing

r0046.20

Control of armature short-circuiting in the power unit

Drive converter

Motor terminals are not at zero potential after pulse cancellation

p1231 = 4

<1>

<1> p0300 = 4xx only with S120/S150.

IASC: Internal Armature Short-Circuit

2000 μs

01/2012

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**Technology functions - DC braking (p0300 = 1xx)**

<table>
<thead>
<tr>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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</tr>
</thead>
<tbody>
<tr>
<td>DO: SERVO, VECTOR</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Function diagrams**

Fig. 2-141 7017 - DC braking (p0300 = 1xx)

---

1. The DC braking current is determined during automatic calculation (p0340 = 1).
2. The de-magnetization time is determined during automatic calculation (p0340 = 1, 3).
3. As soon as the standstill threshold (p1226) has been reached, the DC current injection will be aborted prematurely.
4. Signal r1238.6 is only set while the DC braking is active.
5. Only for SINAMICS S120 and SERVO.
6. Only for SINAMICS S120 and VECTOR.
7. Only for VECTOR.
8. DC braking upon falling below the starting speed for DC braking (p1234).

---

The parameters of the I_max current controller are also used.

- **Mot t_de-excitat**
  - 0.000...20.000 s
  - p0347(M) (0.000)
- **DCBRK I_brake**
  - 0.000...10000.00 A
  - p1232(M) (0.00)
- **DCBRK time**
  - 0.00...3600.0 s
  - p1233(M) (0.0)
- **DCBRK n_start**
  - 20.00...210000.0 [min]
  - p1234(M) (0.0)

---

- **fp_7017_54_eng.vsd**
- **DO: SERVO, VECTOR**
- **Technology functions - DC braking (p0300 = 1xx)**

---

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Fig. 2-142 7020 – Synchronization

**Frequency measurement**
- Sync f_diff
- Sync f_diff thresh
- n_limit pos eff
- n_limit neg eff
- A07941 f_target < f_min
- A07941 f_target > f_max

**Phase measurement/closed-loop control**
- Sync f_diff
- Sync phase diff
- Sync f_lim
- Sync f_corr
- Sync line-drive enabled
- Sync line-drive in synchronism

**Actual voltage sensing**
- f
- \( \varphi \)

**Synchronizing voltage sensing**
- \( f_{act} \)
- \( \varphi_{act} \)

**To setpoint channel**
- [3030.8]
- [3080.5]

---

**Table:**

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
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<tbody>
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<td>2</td>
</tr>
<tr>
<td>DO: VECTOR, VECTORMV</td>
<td>fp_7020_51_eng.vsd</td>
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**Technology functions - Synchronization**

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
## 2.16 Technology controller

### Function diagrams

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<tr>
<td>7951 – Fixed values, direct selection (r0108.16 = 1 and p2216 = 1)</td>
<td>2-1139</td>
</tr>
<tr>
<td>7954 – Motorized potentiometer (r0108.16 = 1)</td>
<td>2-1140</td>
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<tr>
<td>7958 – Closed-loop control (r0108.16 = 1)</td>
<td>2-1141</td>
</tr>
<tr>
<td>7960 – DC-link voltage controller (r0108.16 = 1)</td>
<td>2-1142</td>
</tr>
</tbody>
</table>
**Fig. 2-143 7950 – Fixed values, binary selection (r0108.16 = 1 and p2216 = 2)**

- **Tec_ctrl fix val 1**
  - -200.00...200.00 [%]
  - p2201[D] (10.00)

- **Tec_ctrl fix val 2**
  - -200.00...200.00 [%]
  - p2202[D] (20.00)

- **Tec_ctrl fix val 3**
  - -200.00...200.00 [%]
  - p2203[D] (30.00)

- **Tec_ctrl fix val 4**
  - -200.00...200.00 [%]
  - p2204[D] (40.00)

- **Tec_ctrl fix val 5**
  - -200.00...200.00 [%]
  - p2205[D] (50.00)

- **Tec_ctrl fix val 6**
  - -200.00...200.00 [%]
  - p2206[D] (60.00)

- **Tec_ctrl fix val 7**
  - -200.00...200.00 [%]
  - p2207[D] (70.00)

- **Tec_ctrl fix val 8**
  - -200.00...200.00 [%]
  - p2208[D] (80.00)

- **Tec_ctrl fix val 9**
  - -200.00...200.00 [%]
  - p2209[D] (90.00)

- **Tec_ctrl fix val 10**
  - -200.00...200.00 [%]
  - p2210[D] (100.00)

- **Tec_ctrl fix val 11**
  - -200.00...200.00 [%]
  - p2211[D] (110.00)

- **Tec_ctrl fix val 12**
  - -200.00...200.00 [%]
  - p2212[D] (120.00)

- **Tec_ctrl fix val 13**
  - -200.00...200.00 [%]
  - p2213[D] (130.00)

- **Tec_ctrl fix val 14**
  - -200.00...200.00 [%]
  - p2214[D] (140.00)

- **Tec_ctrl fix val 15**
  - -200.00...200.00 [%]
  - p2215[D] (150.00)

**<1>** p2216 in sight for SERVO and VECTOR only.

**<101>** The pre-assignment of the sampling time in p0115[6] is 4000.00 μs.

**DO: SERVO, VECTOR, VECTORMV**
- fp_7950_51_eng.vsd
  - Function diagram
  - Technology controller - Fixed value selection binary (r0108.16 = 1 and p2216 = 2)
  - 09.04.10 V04.05.00

**SINAMICS**
Fig. 2-144

Tec_ctrl sel bit 0
p2220[C]

Tec_ctrl sel bit 1
p2221[C]

Tec_ctrl sel bit 2
p2222[C]

Tec_ctrl sel bit 3
p2223[C]

Tec_ctr FixVal ZSW
r2225.0

Function diagram

<101> The pre-assignment of the sampling time in p0115[6] is 4000.00 μs.

Refer to [1020.7]

<101>
Fig. 2-145 7954 – Motorized potentiometer (r0108.16 = 1)

Function diagrams

Technology controller - Motorized potentiometer (r0108.16 = 1)

Data save active
0 = The setpoint for the motorized potentiometer is not saved and after ON is entered using p2240.
1 = The setpoint for the motorized potentiometer is saved after OFF and after ON is entered using r2231.

Initial rounding-off active
0 = Without initial rounding.
1 = With initial rounding. The ramp-up/down time set is exceeded accordingly.

Non-volatile data save active
0 = Non-volatile data save not activated.
1 = The setpoint for the motorized potentiometer is saved in a non-volatile fashion (for p2230.0 = 1).

The ramp-function generator is always active
0 = Ramp-up encoder inactive with pulse disable.
1 = The ramp-up encoder is calculated independently of the pulse enable.

<Tech_ctr mop config>

p2230[D] (00100)

<Tech_ctr mop config>

p2230 = 0, this setpoint is entered after ON.
<p2230.2 = 1>, the selected ramp-up/down times are exceeded accordingly.
The pre-assignment of the sampling time in p0115[6] is 4000.00 μs.

<Tech_ctr mop config>

p2230[D] (10.0)

<Tech_ctr mop config>

p2238[D] (-100.00)

<Tech_ctr mop config>

p2237[D] (100.00)

<Tech_ctr mop config>

p2240[D] (0.00)

<Tech_ctr mop config>

p2235[C] (0)

<Tech_ctr mop config>

p2236[C] (0)

<Tech_ctr mop config>

p2239[C] (0)

<Tech_ctr mop config>

<1> For p2230.0 = 0, this setpoint is entered after ON.
<2> If initial rounding-off is active (p2230.2 = 1), the selected ramp-up/down times are exceeded accordingly.
<101> The pre-assignment of the sampling time in p0115[6] is 4000.00 μs.
Technology controller - Closed-loop control (r0108.16 = 1)

1. P, I, and D components can be disabled by entering a zero.
2. Behavior can be changed via p2252.
3. I component stop, only when r2273 and r2294 in same direction.
4. Not for VECTORMV.
5. The pre-assignment of the sampling time in p0115[6] is 4000.00 μs.

---

**Fig. 2-146**

**7958 – Closed-loop control (r0108.16 = 1)**

**Function diagram**

[Diagram showing the closed-loop control process with various parameters and components like Tec_ctrl_setpoint 1, Tec_ctrl_setpoint 2, Tec_reg_config, Tec_ctrl_t_ramp-up, Tec_ctrl_t_ramp-down, Tec_ctrl_set_T, Tec_ctrl_t_diff, Tec_ctrl_set_aft_fl, Tec_ctrl_set_aft_fl_t, Tec_ctrl_set_aft_fl_t_r, Tec_ctrl_act_val, Tec_ctrl_act_val_max, Tec_ctrl_act_val_min, Tec_ctrl_setpoint 1, Tec_ctrl_setpoint 2, etc.]
## 2.17 Signals and monitoring functions

### Function diagrams

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<tr>
<td>8012</td>
<td>Torque signals, motor locked/stalled</td>
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<td>Load monitoring (r0108.17 = 1)</td>
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<td>2-1149</td>
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<td>8017</td>
<td>Thermal motor models (p0300 = xxx)</td>
<td>2-1150</td>
</tr>
</tbody>
</table>
Signals and monitoring functions - Torque signals, motor locked/stalled

- Ramp-up completed
  - M_set total: p0079 [0]
  - M_set total: [6560.8]
  - M_max offset: p1532 [2] [6620.7]
  - M_max upper effective: [1539] [6640.8]
  - M_max lower effective: [1538] [6640.8]
  - M_utilization smooth: p0081
  - M_utilization: p0033
  - 2 % of p2174

- Torque setpoint < p2174
  - Torque utilization < p2194
  - M_max Offset: p1532
  - M_max lower effective: [1538] [6640.8]
  - M_max upper effective: [1539] [6640.8]
  - M_utilization smooth: p0033
  - M_utilization: p0081
  - Actual torque limit: [3080.4]

- Ramp-function generator operating
  - 0.00...100000.00 Nm
  - p2174 (6.13)

- Function diagrams

- Fig. 2-150 8012 – Torque signals, motor locked/stalled

- DO: SERVO, VECTOR

- Ramp-up completed
  - 0.00...100000.00 Nm
  - p2195 (600.0)

- Ramp-function generator operating
  - 0.00...99999.00 Nm
  - p2174 (6.13)

- Torque setpoint < p2174
  - 2 % of p2174
  - Positive torque requested

- M_set total, smooth
  - p0079 [1]
  - M_set total: [6560.5]
  - M_max Offset: p1532 [2] [6620.7]
  - M_max upper effective: [1539] [6640.8]
  - M_max lower effective: [1538] [6640.8]

- Travel to fixed stop
  - Motor locked detection or motor locked monitoring function (not for closed-loop torque control)
  - 0.00...65000.00 s
  - p2177 (1.000)

- Motor locked
  - 0.00...100000.00 RPM
  - p2175 (120.00)

- Motor stall enab neg
  - Mot block n_thresh
  - 0.00...210000.00 RPM
  - p2175 (120.00)

- Speed adaptation, speed deviation
  - Motor stalled
  - 0.00...100000.00 s
  - p2179 (0.010)

- Only VECTOR

- Stall detection or stall monitoring (not for U/f control and not for p0300 = 5)
  - 0.00...100000.00 s
  - p2179 (0.010)
Fig. 2-151 8013 – Load monitoring (r0108.17 = 1)

**Signals and monitoring functions - Load monitoring (r0108.17 = 1)**

**Function diagrams**

- **Function diagram**: fp_8013_54_eng.vsd

---

1. **DO**: SERVO, VECTOR
2. **Signals and monitoring functions - Load monitoring (r0108.17 = 1)**

---

- **Tolerance bandwidth**
- **Load monitoring response**
  - A07920: "Torque/speed too low"
  - A07921: "Torque/speed too high"
  - A07922: "Torque/speed outside tolerance"
  - A07923: "Internal voltage protection initiated"

---

<1> The response to these faults can be defined.
<2> Only for VECTOR.
<3> Only for SERVO.
Signals and monitoring functions - Thermal monitoring, power unit

- Thermal monitoring for the power unit
- Faults "power unit overtemperature"
  - F30004 inverter heatsink
  - F30024 thermal model <3>
  - F30025 chip
  - F30035 air intake
  - F30036 electronics module
  - F30037 rectifier

- Alarms "power unit overtemperature"
  - A05000 inverter heatsink
  - A05001 chip
  - A05002 air intake
  - A05003 electronics module
  - A05004 rectifier
  - A05006 chip to heatsink <4>

- Overload response
  - Power unit overload response p0290

- Alarm threshold
  - I²t overload power unit 0...100 % p0294 (95 %)

- LT I_rated
  - r0207

- i²t model
  - Power unit
  - I_act abs. value
  - [5730.4] [8850.4] [8950.4]
  - p0068

- Pulse frequency
  - p1800

- LT I_rated
  - r0207

- Power unit overload response
  - Power unit overload response p0290

- Faults "power unit overtemperature"
  - F30004 inverter heatsink
  - F30024 thermal model <3>
  - F30025 chip
  - F30035 air intake
  - F30036 electronics module
  - F30037 rectifier

For specific modules and conditions:

- <1> Not for A_INF, B_INF and S_INF.
- <2> Not for Basic Line Modules Chassis.
- <3> Only for Power Unit Chassis
- <4> Only for Power Unit Blocksize
- <5> Only for SINAMICS S120.
Fig. 2-153 8016 – Thermal monitoring, motor

### Signals and monitoring functions

#### Function diagrams

**Function diagram 8016**

- **Mot Temp Sensortyp**
  - p0600[M]
  - p0601[M]

- **Mot Temp Sensor**
  - p0601[M]

**Temperature channel**

- **Temperature channel 1**
  - 1: PT100 or PT1000
  - 2: KTY84
  - 3: KTY84 & PTC
  - 4: Bimetal NC contact

**Configuration**

- 0 = No sensor
- 1 = PT100 or PT1000 alarm
- 2 = KTY84 alarm
- 3 = KTY84 & PTC alarm
- 4 = Bimetal NC contact alarm

### Fault response

- **I_max reduction**
  - p0610[M]

- **Suppress fault**
  - p0610 = 0
  - p0610 = 1

### Signals and monitoring functions - Thermal monitoring, motor

**Mot Temp_sensortyp**

- 0 = No sensor
- 1 = PT100 or PT1000
- 2 = KTY84
- 3 = KTY84 & PTC
- 4 = Bimetal NC contact

**Temperature channel**

- **Temperature channel 1**
  - 1: PT100
  - 2: PT1000
  - 3: KTY84
  - 4: PTC

**Mot Temp sensor**

- p0600[M]
- p0601[M]

**Mot Temp_sensortyp**

- p0600[M]
- p0601[M]

**Mod 1/2/C threshold**

- p0610[M]

- **Fault response**
  - **Suppress fault**
  - **I_max reduction**

- **Sensor type**
  - KTY
  - PT100
  - PT1000
  - PTC

- **Configuration**
  - **Temperature channel**
    - 1: PT100
    - 2: PT1000
    - 3: KTY84
    - 4: PTC

- **Mot Temp_sensortyp**
  - 0 = No sensor
  - 1 = PT100
  - 2 = PT1000
  - 3 = KTY84
  - 4 = PTC

- **Fault response**
  - **Suppress fault**
  - **I_max reduction**

**DO: SERVO, VECTOR**

- **Function diagram**
  - fp_8016_54_eng.vsd

**Signals and monitoring functions - Thermal monitoring, motor**

- **Mot Temp_sensortyp**
  - 0 = No sensor
  - 1 = PT100
  - 2 = PT1000
  - 3 = KTY84
  - 4 = PTC

- **Temperature channel**
  - 1: PT100
  - 2: PT1000
  - 3: KTY84
  - 4: PTC

- **Fault response**
  - **Suppress fault**
  - **I_max reduction**

**Do not hallucinate.**
Fig. 2-154 8017 – Thermal motor models (p0300 = xxx)

Function diagrams
Signals and monitoring functions

- Thermal motor model 1 (I2t)
  - (only for synchronous motor)
  - Activate thermal motor model 1 (I2t)
    - p0612.0[M] (0)
  - Mot_I_standstill
    - p0318[M]
  - I_act_abs_val_unsmoothed
    - p0068[0]
  - I2t mot_mod T
    - p0611[M]

- Thermal motor model 2
  - (for induction motors only)
  - State of breaking
    - p0068[0]
    - Mot_temp
      - p0035
  - <1> Only if there is a temperature sensor
    - (p0600 > 0 and p0601 = 2, 3, or with p0601 = 10 and p4600 ... p4603 = 20).
  - <2> Only if <1> are not met.
  - <3> Only for SERVO.

- Thermal motor model 3
  - (only for synchronous motor)
  - Activate thermal motor model 3
    - p0612.2[M](0)

- Calculate motor temperatures
  - Mot_T_ambient
    - p0625[M]

Fault threshold
- p5391[M]
  - T = p3571
  - p3581
  - ≥ 1

- Alarm threshold
  - p5390[M]
  - p3580
  - x 100 [%]

- Motor utilization
  - p0034

- A07012 "1/3 Thermal motor model overtemperature"
## 2.18 Diagnostics

### Function diagrams

<table>
<thead>
<tr>
<th>Function Code</th>
<th>Description</th>
<th>Page</th>
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</thead>
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<tr>
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<td>Fault buffer</td>
<td>2-1152</td>
</tr>
<tr>
<td>8065</td>
<td>Alarm buffer</td>
<td>2-1153</td>
</tr>
<tr>
<td>8070</td>
<td>Fault/alarm trigger word (r2129)</td>
<td>2-1154</td>
</tr>
<tr>
<td>8075</td>
<td>Fault/alarm configuration</td>
<td>2-1155</td>
</tr>
<tr>
<td>8134</td>
<td>Measuring sockets</td>
<td>2-1156</td>
</tr>
</tbody>
</table>
**Function diagrams**

**Diagnostics**

Fig. 2-155  
8060 – Fault buffer

---

**Fault times**

**Faults Acknowledging**

**Fault Active**

- **Fault Drive Object**
- **Component number**
- **Diagnostic attribute**

---

**DO: All objects**

**Function diagram**

fp_8060_51_eng.vsd  
Function diagram - 8060 -

07.12.10 V04.05.00

SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

---

**Fault responses to the sequence control [2610]**

<1> This fault is overwritten when "more recent" faults occur (with the exception of "safety faults").

<2> Refer to the list manual, index entry "Fault buffer – save upon power OFF".

<3> The buffer parameters are cyclically updated in the background (refer to the status signal in r2139).
**Alarm buffer**

1. **Alarm code**
2. **Alarm value**
3. **Alarm time "come"**
4. **Alarm time "removed"**
5. **Component number alarm**
6. **Diagnostic attribute alarm**

### Alarm History

- **Alarm 1 (most recent)**
  - r2122[8]
  - r2124[8] [I32]
  - r2123[8] [ms]
  - r2125[8] [ms]
  - r3121[8]
  - r3123[8]

- **Alarm 2**
  - r2122[9]
  - r2124[9] [I32]
  - r2123[9] [ms]
  - r2125[9] [ms]
  - r3121[9]
  - r3123[9]

- **Alarm 56 (oldest)**
  - r2122[83]
  - r2124[83] [I32]
  - r2123[83] [ms]
  - r2125[83] [ms]
  - r3121[83]
  - r3123[83]

### Alarm Buffer Change

- Fault buffer change [8060.8]
- Alarm buffer change [8060.8]

---

<1> The buffer parameters are updated cyclically in the background (see status signal in r2139).

---

**Legend:***
- Alarm comes
- Alarm goes
- Alarm buffer change
- Counter 16 bit
- 16 bit counter, free running
- POWER ON
- Warning Present
- Control Unit Warning Present
- Refer to [1020.7]

---

**Function diagram details:**
- **Alarm history**
  - Alarm 1 (most recent)
  - Alarm 2
  - Alarm 56 (oldest)
- **Alarm code**
  - Alarm value
  - Alarm time "come"
  - Alarm time "removed"
- **Component number alarm**
- **Diagnostic attribute alarm**

---

**Notes:**
- **Alarm present**
- **Alarm goes**
- **Alarm buffer change**
- **Fault buffer change**
- **16 bit counter, free running**
- **POWER ON**

---

**References:**
- [1020.7]
- [8060.8]
- [2546.3]
- [2138.11]
- [2138.12]

---

**Further reading:**
- SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Fig. 2-157  8070 – Fault/alarm trigger word (r2129)

Fault/alarm trigger word
(e.g. as trigger condition to record traces)

Select fault/alarm code for trigger p2128

[0] 0. Fault/alarm code
[1] 1. Fault/alarm code

0. Message/signal present {r2129.0}
1. Message/signal present {r2129.1}

15. Message/signal present {r2129.15}

Setting, fault/alarm trigger

0. Message/signal present
1. Message/signal present
15. Message/signal present

0. Fault/alarm code
1. Fault/alarm code
15. Fault/alarm code

0. Message/signal present
1. Message/signal present
15. Message/signal present

- 8070 -
Changing the fault response for maximum 20 faults <1>

Changing the acknowledge mode for maximum 20 faults <1>

Changing the message type - fault <=> alarm for maximum 20 faults/alarms <1>

<1> The fault response, acknowledge mode and message type for all faults and alarms are set to meaningful default values in the factory setting. Changes that may be required are only possible in specific value ranges specified by SIEMENS.

When the message type is changed, the supplementary information is transferred from fault value r0949 to alarm value r2124 and vice versa.

Function diagrams

Diagnostics - Measuring sockets

-100 000.00...100 000.00 % p0777[0] (0.00)
-100 000.00...427.9E9 % p0779[0] (100.00)

Scaling

-100 000.00...427.9E9 %
-100 000.00...100 000.00 %
0.00...4.98 V
0.00...4.98 V

Limit

Reference quantities p200x

-100 000.00...100 000.00 %
-100 000.00...427.9E9 %
0.00...4.98 V
0.00...4.98 V

Example: If a speed signal is entered via p0071 and r0786 indicates 100.0, a speed change of 100 RPM results in an output voltage change of 1.0 V.

<1> Only for measuring equipment with Ri ≥ 1 MΩ.
<2> With the factory setting, input values from -100...100 % result in output voltages from 0...4.98 V.
<3> The input signals are determined by the reference quantities p200x (100 % corresponds to p200x). The calculated normalization is indicated via r0786.
<4> Example: If a speed signal is entered via p0071 and r0786 indicates 100.0, a speed change of 100 RPM results in an output voltage change of 1.0 V.
## 2.19 Data sets

### Function diagrams

<table>
<thead>
<tr>
<th>Data Set ID</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>8560</td>
<td>Command Data Sets (CDS)</td>
<td>2-1158</td>
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<tr>
<td>8565</td>
<td>Drive Data Sets (DDS)</td>
<td>2-1159</td>
</tr>
<tr>
<td>8570</td>
<td>Encoder Data Sets (EDS)</td>
<td>2-1160</td>
</tr>
<tr>
<td>8575</td>
<td>Motor Data Sets (MDS)</td>
<td>2-1161</td>
</tr>
<tr>
<td>8580</td>
<td>Power unit Data Sets (PDS)</td>
<td>2-1162</td>
</tr>
</tbody>
</table>
Example:
Change over Command Data Set
CDS0 --> CDS1

DO: SERVO, VECTOR

Data sets - Command Data Sets (CDS)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: SERVO, VECTOR</td>
<td>fp_8560_54_eng.vsd</td>
<td>Function diagram</td>
<td>8560 - Command Data Sets (CDS)</td>
<td>20.10.08 V04.05.00</td>
<td>S120/S150/G130/G150</td>
<td>- 8560 -</td>
<td></td>
</tr>
</tbody>
</table>
DDS (Drive Data Set)
Fig. 2-162  8570 - Encoder Data Sets (EDS)

DDS (Drive Data Set)

- p0186[D] (MDS number)
- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
- p0189[D] (Enc 3 EDS number)

<1> Encoder errors always refer to the currently active Encoder Data Set.

- p0186[D] (MDS number)
- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
- p0189[D] (Enc 3 EDS number)

<1> Encoder errors always refer to the currently active Encoder Data Set.

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- p0188[D] (Enc 2 EDS number)
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- p0188[D] (Enc 2 EDS number)
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- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
- p0189[D] (Enc 3 EDS number)

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- p0186[D] (MDS number)
- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
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- p0186[D] (MDS number)
- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
- p0189[D] (Enc 3 EDS number)

<1> Encoder errors always refer to the currently active Encoder Data Set.

- p0186[D] (MDS number)
- p0187[D] (Enc 1 EDS number)
- p0188[D] (Enc 2 EDS number)
- p0189[D] (Enc 3 EDS number)

<1> Encoder errors always refer to the currently active Encoder Data Set.
The following applies for the changeover of motor data sets:

1. SERVO and VECTOR: The thermal model of motors with the same motor number is identical.

2. VECTORGL and VECTORMV: The thermal monitoring of motors with the same motor number is identical. An unequal bit number means that the motor must be changed over.

Copy MDS, source:
\[ p0139[0] \]

Copy MDS, target:
\[ p0139[1] \]

Copy MDS, start:
\[ p0139[2] \]

Application:

- Motor changeover
- Motor changeover with ZSW

DDS (Drive Data Set):

- Motor selection:
  - p0830.0
  - p0830.1
  - p0830.2
  - p0830.3
  - p0830.15

- Feedback signal, contactor 0:
  - p0831[0]

- Feedback signal, contactor 1:
  - p0831[1]

- Feedback signal, contactor 2:
  - p0831[2]

- Feedback signal, contactor 3:
  - p0831[3]

- Feedback signal, contactor 15:
  - p0831[15]

- Motor changeover sig:
  - p0828[C]

- Motor number:
  - p0826[0]

- Bit number:
  - p0827[0]

- Motor changeover ZSW:
  - r0835.0
  - r0835

Application:

- Pulse suppression
- Motor changeover
- Motor changeover with ZSW
- Motor selection
Fig. 2-164 8580 – Power unit Data Sets (PDS)

DO: SERVO, VECTOR
S120/S150/G130/G150
28.07.09 V04.05.00

Data sets - Power unit Data Sets (PDS)

PDS0

De-activate power unit 1 (PDS0)
pxxxx[0]

De-activate power unit 8 (PDS7)
pxxxx[7]

LT_compo act/inact
r0126[0]
LT_compo act/inact r0126[7]

PDS1
PDS7

0 = De-activate component
1 = Activate component

Word 1 1 1 1 1 1 1 1

Function diagrams

Not relevant
Refer to [1020.7]
## 2.20 Basic Infeed

### Function diagrams

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<th>Code</th>
<th>Description</th>
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<td>2-1164</td>
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<tr>
<td>8726</td>
<td>Status word, sequence control infeed</td>
<td>2-1165</td>
</tr>
<tr>
<td>8732</td>
<td>Sequencer</td>
<td>2-1166</td>
</tr>
<tr>
<td>8734</td>
<td>Missing enable signals, line contactor control</td>
<td>2-1167</td>
</tr>
<tr>
<td>8750</td>
<td>Interface to the Basic Infeed power unit (control signals, actual values)</td>
<td>2-1168</td>
</tr>
<tr>
<td>8760</td>
<td>Signals and monitoring functions (p3400.0 = 0)</td>
<td>2-1169</td>
</tr>
</tbody>
</table>
### Control word sequence control infeed

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>p0844[pC] (1)</td>
</tr>
<tr>
<td>1</td>
<td>DO: B_INF</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>Reserved</td>
</tr>
<tr>
<td>7</td>
<td>Reserved</td>
</tr>
<tr>
<td>8</td>
<td>Reserved</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>1 = Control via PLC</td>
</tr>
<tr>
<td>11</td>
<td>Reserved</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

1. OFF2 (electrical)

1. OFF2 (electrical)

1. OFF2 (electrical)

1. OFF2 (electrical)

1. OFF2 (electrical)

1. OFF2 (electrical)

<2> PROFIBUS interconnection:
For the manufacturer-specific PROFIBUS telegram, the upper input is connected to PROFIBUS signal A_STW1 [2447]. Only applies for CDS0.

<3> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).

<4> Only for S120 and G150.

<1> STW1.10 must be set to ensure that the drive object accepts the process data (PZD).

<2> PROFIBUS interconnection:
For the manufacturer-specific PROFIBUS telegram, the upper input is connected to PROFIBUS signal A_STW1 [2447]. Only applies for CDS0.

<3> Is pre-defined via the PC if the master control is retrieved.

<4> Only for S120 and G150.
Function diagram

Bit No. | Status word sequence control infeed
---|---
0 | 1 = Ready for switching on
1 | 1 = Ready for operation
2 | 1 = Operation enabled
3 | Reserved
4 | 1 = No OFF2 active
5 | Reserved
6 | 1 = Switching on inhibited
7 | Reserved
8 | Reserved
9 | 1 = Control requested <1>
10 | Reserved
11 | 1 = Pre-charging completed [8750]
12 | 1 = Line contactor closed
13 | Reserved
14 | Reserved
15 | Reserved

<1> The drive object is ready to accept data.
<2> Only for S120 and G150.

DO: B_INF

Basic Infeed - Status word, sequence control infeed
Fig. 2-167 8732 – Sequencer

1. **POWER ON**
   - 24 V electronics power supply OFF --> ON or RESET button.

2. **S1: Switching on inhibited**
   - ZSWAE.6 = 1
   - ZSWAE.0/12 = 0
   - "Commissioning completed" (p10 = 0 and p9 = 0)
   - "0 = OFF1" (STWAE.0)
   - "0 = OFF2" (STWAE.1)

3. **S2: Ready for switching on**
   - ZSWAE.0/1/26 = 0
   - Line contactor is open
   - Wait for power-on

4. **S3: Close the line contactor**
   - Pre-charging
   - Time monitoring refer to [8760]

5. **S3a: Close the line contactor**
   - Energize contactor
   - "0 = OFF1" (STWAE.0)
   - "0 = OFF2" (STWAE.1)

6. **S4: Operation**
   - ZSWAE.0/1/2 = 1
   - ZSWAE.6 = 0
   - Closed-loop control operation to SERVO/VECTOR [2810.1]

7. **S7: Open the line contactor**
   - Open the line contactor

8. **S6: Operation**
   - ZSWAE.0/1/2 = 1
   - ZSWAE.6 = 0
   - SLM/BLM operation to SERVO/VECTOR

**Faults/alarms**
- F06000
- F07200
- F07300
- A06602

**Commissioning**
- Missing enable signals [8734]
- Faults/alarms [8734]
### Missing enable signals

Missing enable signals that prevent the drive going into operation (this situation can be detected at the ZSW sequence control, infeed r0899.2 = 1 [8726]).

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = OFF1, enable missing (p0840 = 0 or switching on inhibited is present)</td>
</tr>
<tr>
<td>1</td>
<td>1 = OFF2, enable missing (p0844 = 0 or p0845 = 0)</td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 = Operation enable missing (r0888.3 = 0 [8720])</td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 = EP terminals, enable missing (pulse enable EP terminals missing)</td>
</tr>
<tr>
<td>9</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>1 = OFF1 internal enable missing (OFF1 fault response is present)</td>
</tr>
<tr>
<td>17</td>
<td>1 = OFF2 internal enable missing (commissioning selected p0009 &gt; 0 or p0010 &gt; 0 or OFF2 fault response present)</td>
</tr>
<tr>
<td>26</td>
<td>1 = Infeed inactive or not operational</td>
</tr>
<tr>
<td>29</td>
<td>1 = Cooling unit ready signal missing</td>
</tr>
</tbody>
</table>

### Line contactor control

From sequence control [8732.4]

- S7 open line contactor
- S6 open line contactor
- S3a close line contactor

Close line contactor [8760.5] [2130]...

Line contactor feedback sig p0860 [2130]...

### Control Unit

- r0863.1
- r0899.12

### Function Diagram

- Control Unit
- Line contactor control
- Missing enable signals
- From line supply
- To Line Module
- +24 V

### Notes

<1> Only for S120 and G150.
Fig. 2-169 8750 – Interface to the Basic Infeed power unit (control signals, actual values)

DO: B_INF

Basic Infeed - Interface to the Basic Infeed power unit (control signals, actual values)

fp_8750_54_eng.vsd

- 8750 -
**Basic Infeed - Signals and monitoring functions (p3400.0 = 0)**

### DC link monitoring

- **Line voltage monitoring when powering-up**
  - Vdc_act \( p0210 \)
  - Supply voltage \( 85\% \) 110\% \( p0210 \) incorrectly parameterized

- **Temperature monitoring braking resistor**
  - 4000.00 μs

- **Precharge monitoring for the DC link**
  - Energize line contactor \( p0857 \)
  - Pre-charging completed \( p0899.11 \)

### DO: B_INF

- F30002 "DC link overvoltage"
  - Vdc_act \( r0070 \)
  - Vdc V_upper_thresh \( r0297 \)

- F30003 "DC link undervoltage condition"
  - Vdc V_lower_thresh \( r0296 \)
  - Vdc offs A thresh \( p0279 \)

- F30004 "Braking Module internal overtemperature"
  - F06907 "Braking Module internal overtemperature" \( x \) \( + \)

- F06000 "Precharging monitoring time expired"
  - F06000 "Pre-charging monitoring time expired"

### Notes

- <1> For B_INF with Braking Module internal only.
- <2> Only für S120 and G150.
## 2.21 Terminal Board 30 (TB30)

### Function diagrams

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>Digital inputs, electrically isolated (DI 0 ... DI 3)</td>
<td>2-1171</td>
</tr>
<tr>
<td>9102</td>
<td>Digital outputs, electrically isolated (DO 0 ... DO 3)</td>
<td>2-1172</td>
</tr>
<tr>
<td>9104</td>
<td>Analog inputs (AI 0 ... AI 1)</td>
<td>2-1173</td>
</tr>
<tr>
<td>9106</td>
<td>Analog outputs (AO 0 ... AO 1)</td>
<td>2-1174</td>
</tr>
</tbody>
</table>
Terminal Board 30 (TB30) - Digital inputs, electrically isolated (DI 0 ... DI 3)

1 = Simulation on
p4095.0 r4023.0 r4022.0
p4095.1 r4023.1 r4022.1
p4095.2 r4023.2 r4022.2
p4095.3 r4023.3 r4022.3

M electrically isolated to the internal CU reference potential M.

<1> M connected to 5 V

<1> 24 V DC to the next device

+24 V X424.+

1. Simulation on

210 - 1000 - Digital inputs, electrically isolated (DI 0 ... DI 3)
Terminal Board 30 (TB30) - Digital outputs, electrically isolated (DO 0 ... DO 3)

1. M electrically isolated to the internal CU reference potential M.

2. TB30 S_src DO 0

3. TB30 S_src DO 1

4. TB30 S_src DO 2

5. TB30 S_src DO 3

6. p4048.0

7. p4048.1

8. p4048.2

9. p4048.3

24 V DC to the next device

+24 V

24 V DC to the next device

Fig. 2-172 9102 - Digital outputs, electrically isolated (DO 0 ... DO 3)
Fig. 2-173  9104 – Analog inputs (AI 0 ... AI 1)

When interconnected further, the output signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).

Differential inputs!
For input signals referred to ground, terminal 2 and/or terminal 4 must be connected to the reference potential M.

Caution: The voltage between an input and the grounding point must not exceed 35V. The voltage between the inputs must not exceed 35V.

Terminal Board 30 (TB30) - Analog inputs (AI 0 ... AI 1)

Function diagram
Fig. 2-174 9106 – Analog outputs (AO 0 ... AO 1)

<1> The input signals are referred to the reference quantities p2000 ... r2004 (100 % = p200x).

Reference quantities p2000 ... r2004

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
</table>
| DO: TB30 | Terminal Board 30 (TB30) - Analog outputs (AO 0 ... AO 1) | fp_9106_51_eng.vsd | Function diagram | - 9106 - | SINAMICS | 25.10.05 V04.05.00 | 2-1174
### 2.22 Communication Board CAN10 (CBC10)

#### Function diagrams

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<thead>
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<th>Function Description</th>
<th>Page</th>
</tr>
</thead>
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<td>2-1176</td>
</tr>
<tr>
<td>9206 – Receive telegram, Predefined Connection Set (p8744 = 1)</td>
<td>2-1177</td>
</tr>
<tr>
<td>9208 – Send telegram, free PDO mapping (p8744 = 2)</td>
<td>2-1178</td>
</tr>
<tr>
<td>9210 – Send telegram, Predefined Connection Set (p8744 = 1)</td>
<td>2-1179</td>
</tr>
<tr>
<td>9220 – Control word, CANopen</td>
<td>2-1180</td>
</tr>
<tr>
<td>9226 – Status word, CANopen</td>
<td>2-1181</td>
</tr>
</tbody>
</table>
Fig. 2-175 9204 – Receive telegram, free PDO mapping (p8744 = 2)

- TO USE AUTOMATIC BICO INTERCONNECTION (p8790 = 1), one of the receive words 1-4 must be used as control word 1 (STW1).
- TELEGRAM: UP TO 4 WORDS OR 64 BITS.
- THE SUM OF THE VARIOUS OBJECTS MUST NOT EXCEED 16 WORDS.
- WHEN INTERCONNECTING A CONNECTOR OUTPUT MULTIPLE TIMES ALL THE CONNECTOR INPUTS MUST HAVE EITHER INTEGER OR FLOATING-POINT DATA TYPE.

RPDO: Receive Process Data Object
COB-ID: CAN Communication Object Identifier

1  2  3  4  5  6  7  8
| DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL | fp_9204_51_eng.vsd |
| Communication Board CAN10 (CBC10) - Receive telegram, free PDO mapping (p8744 = 2) | Function diagram |
| SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A |
| 27.05.10 V04.05.00 |

CANopen receive telegram
X451 CAN bus
X452 CAN bus

CAN bus sampling time
Refer to [1020.7]
Fig. 2-176 9206 – Receive telegram, Predefined Connection Set (p8744 = 1)

- 9206 -

Comments:

<1> Telegram: up to 4 words or 64 bits. The sum of the various objects must not exceed 16 words.

<2> When interconnecting a connector output multiple times all the connector inputs must have either Integer or FloatingPoint data type.

RPDO: Receive Process Data Object
COB-ID: CAN Communication Object Identifier

Evaluation of the COB-ID

COB-ID for RPDO 1
PDO mapping for RPDO 1
p8700[0] p8710[0...3]

Automatic assignment of the RPDOs to the receive buffer

Receive buffer

PZD receive word 1

PZD receive word 2

PZD receive word 3

PZD receive word 4

PZD receive word 5

PZD receive word 6

PZD receive word 7

PZD receive word 8

PZD receive word 9

PZD receive word 10

PZD receive word 11

PZD receive word 12

PZD receive word 13

PZD receive word 14

PZD receive word 15

PZD receive word 16

<table>
<thead>
<tr>
<th>Bit 0</th>
<th>Bit 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8850[0]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[1]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[8]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[9]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[10]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[12]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[14]</td>
<td>r8850[15]</td>
</tr>
</tbody>
</table>

Objects available a multiple number of times are marshalled to the same position in the receive buffer.

COB-ID for RPDO 1
PDO mapping for RPDO 1
p8700[0] p8710[0...3]

Automatic assignment of the RPDOs to the receive buffer

Receive buffer

PZD receive word 1

PZD receive word 2

PZD receive word 3

PZD receive word 4

PZD receive word 5

PZD receive word 6

PZD receive word 7

PZD receive word 8

PZD receive word 9

PZD receive word 10

PZD receive word 11

PZD receive word 12

PZD receive word 13

PZD receive word 14

PZD receive word 15

PZD receive word 16

<table>
<thead>
<tr>
<th>Bit 0</th>
<th>Bit 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8850[0]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[1]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[8]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[9]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[10]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[12]</td>
<td>r8850[15]</td>
</tr>
<tr>
<td>r8850[14]</td>
<td>r8850[15]</td>
</tr>
</tbody>
</table>

The assignment is made from RPDO 1, RPDO 2, RPDO 3, RPDO 4 and from receiver word 1.

Function diagrams

Communication Board CAN10 (CBC10) - Receive telegram, Predef. Conn. Set (p8744 = 1)

DO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL

fp_9206_51_eng.vsd Function diagram

SINAMICS
Function diagrams

Communication Board CAN10 (CBC10) - Send telegram, free PDO mapping (p8744 = 2)

Fig. 2-177 9208 – Send telegram, free PDO mapping (p8744 = 2)

<1> Telegram: up to 4 words or 64 bits. The sum of the various objects must not exceed 16 words.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>PDO: SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSRL</td>
<td>fp_9208_51_eng.vsd</td>
<td>Function diagram</td>
<td>23.10.09</td>
<td>V04.05.00</td>
<td>SINAMICS</td>
<td>- 9208 -</td>
<td></td>
</tr>
</tbody>
</table>
CANopen send words 1...16

IF2 Diag PZD send
r8853[0...15]

Send buffer

Automatic assignment of send buffer to the TPDOs

<1>

Telegram: up to 4 words or 64 bits.
The sum of the various objects must not exceed 16 words.

PDO: Transmit Process Data Object
COB-ID: CAN Communication Object Identifier
### Signal targets for control word CANopen

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
<th>Function diagram</th>
<th>Function diagram</th>
<th>Signal target</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1.0</td>
<td>ON (pulses can be enabled)</td>
<td>p0840[0] = r8890.0</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OFF 1 (braking with ramp-function generator, then pulse cancellation and ready-to-power-up)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.1</td>
<td>No coast-down activated (enable possible)</td>
<td>p0844[0] = r8890.1</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activate coast-down (immediate pulse cancellation and power-on inhibit)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.2</td>
<td>No fast stop activated (enable possible)</td>
<td>p0848[0] = r8890.2</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Activate fast stop (braking along an OFF3 ramp p1135, then pulse cancellation and power-on inhibit)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.3</td>
<td>Enable operation (pulses can be enabled)</td>
<td>p0852[0] = r8890.3</td>
<td>[2501.3]</td>
<td>[2610]</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inhibit operation (cancel pulses)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.4</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.5</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.6</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.7</td>
<td>Acknowledge fault</td>
<td>p2103[0] = r8890.7</td>
<td>[2546.1]</td>
<td>[8060]</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.8</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.9</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.10</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW1.11</td>
<td>Can be freely connected</td>
<td>pxxx[y] = r8890.11</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.12</td>
<td>Can be freely connected</td>
<td>pxxx[y] = r8890.12</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.13</td>
<td>Can be freely connected</td>
<td>pxxx[y] = r8890.13</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.14</td>
<td>Can be freely connected</td>
<td>pxxx[y] = r8890.14</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>STW1.15</td>
<td>Can be freely connected</td>
<td>pxxx[y] = r8890.15</td>
<td></td>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<1> Depending on the position of the CANopen control word in p8750, the number of the binector to be connected changes.
### Status word CANopen

<table>
<thead>
<tr>
<th>Bit No.</th>
<th>Status word CANopen</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Ready to power-up</td>
</tr>
<tr>
<td>1</td>
<td>1 = Ready to operate (DC link loaded, pulses blocked)</td>
</tr>
<tr>
<td>2</td>
<td>1 = Operation enabled (drive follows n_set)</td>
</tr>
<tr>
<td>3</td>
<td>1 = Fault present</td>
</tr>
<tr>
<td>4</td>
<td>1 = No coast down active</td>
</tr>
<tr>
<td>5</td>
<td>1 = No fast stop active</td>
</tr>
<tr>
<td>6</td>
<td>1 = Power-on inhibit active</td>
</tr>
<tr>
<td>7</td>
<td>1 = Alarm present</td>
</tr>
<tr>
<td>8</td>
<td>Freely interconnectable (BI: p8785)</td>
</tr>
<tr>
<td>9</td>
<td>1 = Control requested</td>
</tr>
<tr>
<td>10</td>
<td>1 = Target reached &lt;1&gt;</td>
</tr>
<tr>
<td>11</td>
<td>1 = Torque limit reached</td>
</tr>
<tr>
<td>12</td>
<td>1 = Velocity equal to zero</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>Freely interconnectable (BI: p8786)</td>
</tr>
<tr>
<td>15</td>
<td>Freely interconnectable (BI: p8787)</td>
</tr>
</tbody>
</table>

<1> With setpoint channel: connect p2151 with r1119 [8010.5].

---

**DO:** SERVO, VECTOR, VECTORGL, VECTORMV, VECTORSL

**Communication Board CAN10 (CBC10) - Status word, CANopen**

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

Fig. 2-180 9226 – Status word, CANopen
# 2.23 Terminal Module 31 (TM31)

## Function diagrams

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>9550</td>
<td>Digital inputs, electrically isolated (DI 0 ... DI 3)</td>
<td>2-1183</td>
</tr>
<tr>
<td>9552</td>
<td>Digital inputs, electrically isolated (DI 4 ... DI 7)</td>
<td>2-1184</td>
</tr>
<tr>
<td>9556</td>
<td>Digital relay outputs, electrically isolated (DO 0 ... DO 1)</td>
<td>2-1185</td>
</tr>
<tr>
<td>9560</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)</td>
<td>2-1186</td>
</tr>
<tr>
<td>9562</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)</td>
<td>2-1187</td>
</tr>
<tr>
<td>9566</td>
<td>Analog input 0 (AI 0)</td>
<td>2-1188</td>
</tr>
<tr>
<td>9568</td>
<td>Analog input 1 (AI 1)</td>
<td>2-1189</td>
</tr>
<tr>
<td>9572</td>
<td>Analog outputs (AO 0 ... AO 1)</td>
<td>2-1190</td>
</tr>
<tr>
<td>9576</td>
<td>Temperature evaluation (KTY/PTC)</td>
<td>2-1191</td>
</tr>
</tbody>
</table>
When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.
Fig. 2-182 9552 – Digital inputs, electrically isolated (DI 4 ... DI 7)

<1> When using the electrical isolation, omit the terminal jumper and connect the load power supply shown as a dashed line.

24 V DC to the next device

DO: TM31

Terminal Module 31 (TM31) - Digital inputs, electrically isolated (DI 4 ... DI 7)
### Terminal Module 31 (TM31) - Digital relay outputs, electrically isolated (DO 0 ... DO 1)

<table>
<thead>
<tr>
<th>DO: TM31</th>
<th>Function diagram</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal Module 31 (TM31) - Digital relay outputs, electrically isolated (DO 0 ... DO 1)</td>
<td>fp_9556_51_eng.vsd</td>
<td>- 9556 -</td>
</tr>
</tbody>
</table>

**Fig. 2-183** 9556 – Digital relay outputs, electrically isolated (DO 0 ... DO 1)

- **NO**: Normally Open contact ("open" in the quiescent state = NO contact)
- **NC**: Normally Closed contact ("closed" in the quiescent state = NC contact)

The relay contacts have the following ratings - up to 100 V DC 240 W or 250 V AC 2000 VA.

---

**WARNING**
Hazardous voltage!
These terminal can have voltages up to 250 V AC!

---

**<1>** NO: Normally Open contact ("open" in the quiescent state = NO contact)
NC: Normally Closed contact ("closed" in the quiescent state = NC contact)
Fig. 2-184 9560 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)
Fig. 2-185
9562 – Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)

<1> The connection shown in a dashed line applies when used as digital output (p4028.x = 1).

<2> Limits the total output current of the terminals X541.2, X541.3, X541.4 and X541.5 to 0.1 A (p4046 = 0) or 1 A (p4046 = 1).
Terminal Module 31 (TM31) - Analog input 0 (AI 0)

**Voltage**
- X521.1
- S5.0
- V = S5.1 [9568]

**Current**
- +/-20 mA
- +/-10 V

**Hardware smoothing**
- 100 μs

**TM31 AI offset**
- -20.000...20.000 mA
- p4063[0] (0.000)

**TM31 AI T_smooth**
- 0.0...1000.0 ms
- p4053[0] (0.0)

**TM31 AI type**
- p4056[0] (4)

**TM31 AI inp_U/I**
- -1000.00...1000.00 %
- p4058[0] (0.0)

**TM31 AI sim_mode**
- p4097[0] (0)

**TM31 AI sim setp**
- -20.000...20.000 %
- p4098[0] (0.000)

**TM31 AI sim_mode**
- p4097[0] (0)

**TM31 WireBrkThresh**
- 0.00...20.00 mA
- p4061[0] (2.00)

**TM31 WireBrkThresh**
- (4000.00 μs)

**Reference quantities**
- p2000...r2004

**Function diagram**
- fp_9566_51_eng.vsd

**DO: TM31**
- Terminal Module 31 (TM31) - Analog input 0 (AI 0)

- 29.12.10
- V04.05.00
- SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

---

<1> Differential input!
- For an input signal referred to ground, terminal X521.2 must be connected to reference potential M.

**Caution:**
- The voltage between an input (X521.1 or X521.2) and the ground point must not exceed 35 V.
- When the load resistor is switched in (S5.0 closed), the voltage between the input terminals must not exceed 15 V.

<2> For p4056 = 2, 3, 5, the units are mA.
- For p4056 = 0, 4, the units are V.

<3> p4056
- = 0: 0 V ... +10 V
- = 2: 0 mA ... +20 mA
- = 3: 4 mA ... +20 mA with monitoring
- = 4: -10 V ... +10 V
- = 5: -20 mA ... +20 mA

---

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: TM31</td>
<td>Terminal Module 31 (TM31) - Analog input 0 (AI 0)</td>
<td>fp_9566_51_eng.vsd</td>
<td>Function diagram</td>
<td>- 9566 -</td>
<td>29.12.10</td>
<td>V04.05.00</td>
<td>SINAMICS</td>
</tr>
</tbody>
</table>
Fig. 2-188 9572 – Analog outputs (AO 0 ... AO 1)

For p4076 = 0, 2, 3 the units are mA.
For p4076 = 1, 4 the units are V.

For a voltage output, the output voltage can be taken between the following terminals:
AO 0 between X522.2 (reference potential) and X522.1, AO 1 between X522.5 (reference potential) and X522.4.

For a current output, the output current can be taken from between the following terminals:
AO 0 between X522.2 and X522.3, AO 1 between X522.5 and X522.6.

The input signals are referred to the reference quantities p2004 ... r2004 (100 % = p200x).

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: TM31</td>
<td>fp_9572_51_eng.vsd</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Terminal Module 31 (TM31) - Analog outputs (AO 0 ... AO 1)
An alarm A35920 in the temperature evaluation of the TM31 is signaled to the next (downstream) vector control via the special temperature value -300 °C (refer to [9577]).

As a result of the wire breakage monitoring [9577.3] the maximum temperature that can be measured is limited to approx. 188.6 °C.

A value > 250 °C de-activates the alarm or fault.

For KTY p4103 = 0 Output from TempTimer (0).
For PTC p4103 = 0 delay time = 0s.
2.24 Terminal Module 150 (TM150)

Function diagrams

<table>
<thead>
<tr>
<th>Function Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>9625 – Temperature evaluation structure (channel 0 ... 11)</td>
<td>2-1193</td>
</tr>
<tr>
<td>9626 – Temperature evaluation 1x2, 3, 4-wire (channel 0 ... 5)</td>
<td>2-1194</td>
</tr>
<tr>
<td>9627 – Temperature evaluation 2x2-wire (channel 0 ... 11)</td>
<td>2-1195</td>
</tr>
</tbody>
</table>
Fig. 2-190  9625 - Temperature evaluation structure (Channel 0 … 11)

Channel 0
- Calculation and Evaluation
  - Sensor type: p4100

Channel 1
- Channel 6 (only for 2x2-conductor)

Channel 2
- Channel 7 (only for 2x2-conductor)

Channel 3
- Channel 8 (only for 2x2-conductor)

Channel 4
- Channel 9 (only for 2x2-conductor)

Channel 5
- Channel 10 (only for 2x2-conductor)

Channel 6 … 11

Sensor error effect: p4117[0…2]

Calculation and Evaluation:
- Mot_temp S_src
- IF1 PZD send word

X531
- p4108[0]
  - Channel 0
  - Channel 6 (only for 2x2-conductor)

X532
- p4108[1]
  - Channel 0
  - Channel 7 (only for 2x2-conductor)

X533
- p4108[2]
  - Channel 0
  - Channel 8 (only for 2x2-conductor)

X534
- p4108[3]
  - Channel 0
  - Channel 9 (only for 2x2-conductor)

X535
- p4108[4]
  - Channel 0
  - Channel 10 (only for 2x2-conductor)

X536
- p4108[5]
  - Channel 0
  - Channel 11 (only for 2x2-conductor)

Channel 0 alarm is present
- r4104.0
  - A35211

Channel 0 fault is present
- r4104.1
  - F35207

Temperature actual value
- r4105

1x2-conductor
- X53x.1
- X53x.2
- X53x.3
- X53x.4

2x2-conductor
- X53x.1
- X53x.2
- X53x.3
- X53x.4

3-conductor
- X53x.1
- X53x.2
- X53x.3

4-conductor
- X53x.1
- X53x.2
- X53x.3

Sensor resistance: p4101

Motor temperature source: p0603

Group 0
- r4112[0]
- r4113[0]
- r4114[0]

Group 1
- r4112[1]
- r4113[1]
- r4114[1]

Group 2
- r4112[2]
- r4113[2]
- r4114[2]

Motor temperature source 2
- p2051[x]

IF1 PZD send word
- p4117

Sensor error effect
- p4117[0…2]

Sensor resistances:
- r4101[0:3]
- r4105[0:11]

Connect measuring cables.

Sensor error effect: p4117[0…2] (0)

<1> x = 1, 2, 3, 4, 5, 6

<2> Connect measuring cables.

<3> Carefully read the safety notes included in the parameter description for p4111!
Terminal Module 150 (TM150) - Temperature evaluation 2x2-conductor (Channel 0 ... 11)

Fig. 2-192 9627 – Temperature evaluation 2x2-wire (Channel 0 ... 11)

- For p4102[0...23] = 251 °C the evaluation of the appropriate threshold is deactivated.
- p4100[0...11] = 0: Evaluation deactivated
  = 1: PTC thermistor (with monitoring for short-circuit)
  = 2: KTY84 (with monitoring for wire break and short-circuit)
  = 4: Bimetal NC contact (no monitoring)
  = 5: PT100 (with monitoring for wire break and short-circuit)
  = 6: PT1000 (with monitoring for wire break and short-circuit)
- For p4103 = 0 s and sensor type "PTC thermoistor", "Bimetal NC contact" (p4100[0...11] = 2, 5, 6) the following applies:
  - The relevant fault can only be triggered via the fault threshold (the timer output is always logical 0).
  - The corresponding alarm and fault are output simultaneously (delay time = 0 s).
2.25 Voltage Sensing Module (VSM)

Function diagrams

<table>
<thead>
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<th>Function</th>
<th>Page</th>
</tr>
</thead>
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<td>2-1197</td>
</tr>
<tr>
<td>9886 – Temperature evaluation</td>
<td>2-1198</td>
</tr>
</tbody>
</table>
Voltage Sensing Module (VSM) - Analog inputs (AI 0 ... AI 3)

1. Voltage Sensing Module (VSM)
2. Analog inputs (AI 0 ... AI 3)
3. Voltage supply 800 V
4. X22.1 X22.2 X22.3
5. X21.1 X21.2
6. Rated line freq
7. p0211
8. PT1 smoothing

<1> The VECTOR drive object is assigned a dynamic index (p0150).

Limit value comparison
INF - C_filter

Limit value
p0221

Detective circuit (at least one phase)
VSM CT_gain
p3670

0.5 s

Voltage supply (U.scaler)
VSM input (U.scaler)

VSM filter
C A_thresh

失电 capacitor(s) in at least one phase of line filter
r3673

Defective capacitor(s) in at least one phase of line filter
r3671

Rated line freq
p0211

+/-10 V

Rated line freq
p0211

+/-10 V

+/-10 V

26.06.08 V04.05.00

-9880-

Function diagrams
+

9886 – Temperature evaluation

X520.6
KTY/PTC

Hardware
smoothing 1 s

<6> <1>

-

<5>
Sensor type
p3665 (0)

T

Software smoothing 0.5 s

-140 °C

A
D

4000.00 μs

248 °C

Resistance
calculation

<6>

<1>

2

1

PTC

- temp

1

0

-50 °C
250 °C
PTC resistor
threshold 1650 Ohm

0

1

Sensor resistance

[9887.1]

Overtemperature alarm threshold
<4> 0...301 [°C]
<6> p3667[0] (150)

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A

A34211
"Temperature alarm threshold exceeded"
1
r3664.0
0
<6>
Overtemperature hysteresis
p3669
F34207
"Temperature fault threshold exceeded"
1
r3664.1
0
<2>
Alarm A35920
temperature sensor evaluation
Overtemperature fault threshold
<4> 0...301 [°C]
<6> p3668[1] (180)

Alarm is not present

<1> p3665
= 0: No sensor
Alarm is present
-300 °C
= 1: PTC
= 2: KTY
<2> A fault or alarm in the temperature evaluation of the VSM is communicated to the downstream evaluation using special temperature values.
<3> As a result of the wire breakage monitoring the maximum temperature that can be measured is limited to approx. 175 °C.
<4> A value > 250 °C de-activates the alarm or fault.
<5> Can only be used with chassis infeeds.
<6> The VECTOR drive object is assigned a dynamic index (p0150).

1
2
3
DO: A_INF, S_INF, VECTOR
Voltage Sensing Module (VSM) - Temperature evaluation

4

5

6
fp_9886_54_eng.vsd
08.06.07 V04.05.00

Temperature KTY
r3666

7
Function diagram
S120/S150/G130/G150

8
- 9886 -

Function diagrams

+ temp
2 mA

<3>

KTY

Voltage Sensing Module (VSM)

Fig. 2-194

2-1198

Temperature sensor
X520.5

R

Sensor type
p3665 (0)


2.26 Basic Operator Panel 20 (BOP20)

Function diagrams

9912 – Control word interconnection 2-1200
### Interconnection STW BOP (r0019)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW BOP.0</td>
<td>1 = On 0 = OFF (OFF1)</td>
<td>p0840[0] = r0019.0</td>
</tr>
<tr>
<td>STW BOP.1</td>
<td>1 = No coast down 0 = Coast down (OFF2)</td>
<td>p0844[0] = r0019.1</td>
</tr>
<tr>
<td>STW BOP.2</td>
<td>1 = No fast stop 0 = Fast stop (OFF3)</td>
<td>p0848[0] = r0019.2</td>
</tr>
<tr>
<td>STW BOP.3</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.4</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.5</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.6</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.7</td>
<td>= Acknowledge fault</td>
<td>p2102[0] = r0019.7</td>
</tr>
<tr>
<td>STW BOP.8</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.9</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.10</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.11</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.12</td>
<td>Reserved</td>
<td>-</td>
</tr>
<tr>
<td>STW BOP.13</td>
<td>= Motorized potentiometer, raise</td>
<td>p1035[0] = r0019.13</td>
</tr>
<tr>
<td>STW BOP.14</td>
<td>= Motorized potentiometer, lower</td>
<td>p1036[0] = r0019.14</td>
</tr>
<tr>
<td>STW BOP.15</td>
<td>Reserved</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> The BICO interconnection represents an example that can be changed by the user.
## Faults and alarms

### Contents

<table>
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<th>Page</th>
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<td>3-1202</td>
</tr>
<tr>
<td>3.2 List of faults and alarms</td>
<td>3-1212</td>
</tr>
</tbody>
</table>
3.1 Overview of faults and alarms

3.1.1 General information on faults and alarms

Fault and alarm displays

If a fault occurs, the drive indicates this by issuing corresponding fault(s) and/or alarm(s).

The following methods for displaying faults and alarms are available:

- Display via the fault and alarm buffer with PROFIBUS.
- Display online via the commissioning software.

Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 3-1 Differences between faults and alarms

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faults</td>
<td>What happens when a fault occurs?</td>
</tr>
<tr>
<td></td>
<td>• The appropriate fault reaction is triggered.</td>
</tr>
<tr>
<td></td>
<td>• Status signal ZSW1.3 is set.</td>
</tr>
<tr>
<td></td>
<td>• The fault is entered in the fault buffer.</td>
</tr>
<tr>
<td></td>
<td>How are faults eliminated?</td>
</tr>
<tr>
<td></td>
<td>• Remove the original cause of the fault.</td>
</tr>
<tr>
<td></td>
<td>• Acknowledge the fault.</td>
</tr>
<tr>
<td>Alarms</td>
<td>What happens when an alarm occurs?</td>
</tr>
<tr>
<td></td>
<td>• Status signal ZSW1.7 is set.</td>
</tr>
<tr>
<td></td>
<td>• The alarm is entered in the alarm buffer.</td>
</tr>
<tr>
<td></td>
<td>How are alarms eliminated?</td>
</tr>
<tr>
<td></td>
<td>• Alarms acknowledge themselves. If the cause of the alarm is no longer</td>
</tr>
<tr>
<td></td>
<td>present, they automatically reset themselves.</td>
</tr>
</tbody>
</table>
Fault reactions

The following fault reactions are defined:

<table>
<thead>
<tr>
<th>List</th>
<th>PROFI-drive</th>
<th>Reaction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>-</td>
<td>None</td>
<td>No reaction when a fault occurs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Note: When the &quot;Basic positioner&quot; function module is activated (r0108.4 = 1), the following applies: When a fault occurs with fault reaction &quot;NONE&quot;, an active traversing task is interrupted and the system switches to tracking mode until the fault has been rectified and acknowledged.</td>
</tr>
</tbody>
</table>
| OFF1          | ON/OFF      | Brake along the ramp-function generator deceleration ramp followed by pulse disable | Speed control (p1300 = 20, 21)  
• n_set = 0 is input immediately to brake the drive along the ramp-function generator deceleration ramp (p1121).  
• When zero speed is detected, the motor holding brake (if parameters have been assigned for it) is closed (p1215). The pulses are suppressed when the brake closing time (p1217) expires.  
• Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint <= speed threshold (p1226) has expired.  
Closed-loop torque control (p1300 = 23)  
• The following applies for torque control:  
  Reaction as for OFF2  
• When the system switches to torque control with p1501, the following applies:  
  No separate braking reaction.  
  If the actual speed value drops below the speed threshold (p1226) or the timer stage (p1227) has expired, the motor holding brake (if one is being used) is closed. The pulses are suppressed when the brake closing time (p1217) expires. |
| OFF1_DELAYED  | -           | As for OFF1, but delayed | Faults with this fault reaction do not become effective until after the delay time set in p3136. The remaining time up to OFF1 is displayed in r3137. |
| OFF2          | COAST STOP  | Internal/external pulse disable | Closed-loop speed and torque control  
• Instantaneous pulse suppression, the drive "coasts" to a standstill.  
• The motor holding brake (if one is being used) is closed immediately.  
• "Switching on inhibited" is activated. |
## Faults and alarms

### Overview of faults and alarms

Table 3-2  Fault reactions, continued

<table>
<thead>
<tr>
<th>List</th>
<th>PROFI-drive</th>
<th>Reaction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF3</td>
<td>QUICK STOP</td>
<td>Brake along the OFF3 deceleration ramp followed by pulse disable</td>
<td>Speed control (p1300 = 20, 21)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• n_set = 0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• When zero speed is detected, the motor holding brake (if parameters have been assigned for it) is closed. The pulses are suppressed when the closing time of the holding brake (p1217) expires.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zero speed is detected if the actual speed drops below the threshold (p1226) or if the monitoring time (p1227) started when the speed setpoint &lt;= speed threshold (p1226) has expired.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• &quot;Switching on inhibited&quot; is activated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Closed-loop torque control (p1300 = 23)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Changeover to speed-controlled operation and other reactions as described for speed-controlled operation.</td>
</tr>
<tr>
<td>STOP1</td>
<td>-</td>
<td>-</td>
<td>Under development</td>
</tr>
<tr>
<td>STOP2</td>
<td>-</td>
<td>n_set = 0</td>
<td>• n_set = 0 is input immediately to brake the drive along the OFF3 deceleration ramp (p1135).</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• The drive remains in speed control mode.</td>
</tr>
<tr>
<td>IASC/DCBRAKE</td>
<td>-</td>
<td>-</td>
<td>• For synchronous motors, the following applies:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If a fault occurs with this fault reaction, an internal armature short-circuit is triggered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The conditions for p1231 = 4 must be observed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• For induction motors, the following applies:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If a fault occurs with this fault reaction, DC braking is triggered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>DC braking must have been commissioned (p1232, p1233, p1234).</td>
</tr>
<tr>
<td>ENCODER</td>
<td>-</td>
<td>Internal/external pulse disable (p0491)</td>
<td>The fault reaction ENCODER is applied as a function of the setting in p0491.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Factory setting:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>p0491 = 0 --&gt; Encoder fault causes OFF2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Notice:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>When changing p0491, it is imperative that the information in the description of this parameter is carefully observed.</td>
</tr>
</tbody>
</table>
Acknowledgement of faults

The list of faults and alarms specifies how to acknowledge each fault after the cause has been remedied.

Table 3-3 Acknowledgement of faults

<table>
<thead>
<tr>
<th>Acknowledgement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER ON</td>
<td>The fault is acknowledged by a POWER ON process (switch drive unit off and on again).</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If this action has not eliminated the fault cause, the fault is displayed again immediately after power up.</td>
</tr>
<tr>
<td>IMMEDIATELY</td>
<td>Faults can be acknowledged on one drive object (Points 1 to 3) or on all drive objects (point 4) as follows:</td>
</tr>
<tr>
<td></td>
<td>1 Acknowledge by setting parameter: p3981 = 0 --&gt; 1</td>
</tr>
<tr>
<td></td>
<td>2 Acknowledge via binector inputs:</td>
</tr>
<tr>
<td></td>
<td>p2103  BI: 1. Acknowledge faults</td>
</tr>
<tr>
<td></td>
<td>p2104  BI: 2. Acknowledge faults</td>
</tr>
<tr>
<td></td>
<td>p2105  BI: 3. Acknowledge faults</td>
</tr>
<tr>
<td></td>
<td>3 Acknowledge using PROFIBUS control signal: STW1.7 = 0 --&gt; 1 (edge)</td>
</tr>
<tr>
<td></td>
<td>4 Acknowledge all faults: p2102  BI: Acknowledge all faults</td>
</tr>
<tr>
<td></td>
<td>All of the faults on all of the drive objects of the drive system can be acknowledged using this binector input.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td>• These faults can also be acknowledged by a POWER ON operation.</td>
</tr>
<tr>
<td></td>
<td>• If this action has not eliminated the fault cause, the fault will continue to be displayed after acknowledgement.</td>
</tr>
<tr>
<td></td>
<td>• Safety Integrated faults</td>
</tr>
<tr>
<td></td>
<td>The &quot;Safe standstill&quot; (SH) function must be deselected before these faults are acknowledged.</td>
</tr>
<tr>
<td>PULSE DISABLE</td>
<td>The fault can only be acknowledged with a pulse disable (r0899.11 = 0).</td>
</tr>
<tr>
<td></td>
<td>The same options are available for acknowledging as described under acknowledgement with IMMEDIATELY.</td>
</tr>
</tbody>
</table>
Saving the fault buffer when switching off

The contents of the fault buffer are saved to the non-volatile memory when the Control Unit is switched off, i.e. the fault buffer history is still available when the unit is switched on again.

The fault buffer of a drive object comprises the following parameters:

- r0945[0...63], r0947[0...63], r0948[0...63], r0949[0...63]
- r2109[0...63], r2130[0...63], r2133[0...63], r2136[0...63]

The fault buffer contents can be deleted manually as follows:

- Delete fault buffer for all drive objects:
  \[ p2147 = 1 \rightarrow p2147 = 0 \] is automatically set after execution.

- Delete fault buffer for a specific drive object:
  \[ p0952 = 0 \rightarrow \] The parameter belongs to the specified drive object.

The fault buffer contents are automatically deleted when the following occurs:

- Restore factory setting (p0009 = 30 and p0976 = 1).
- Download with modified structure (e.g. number of drive objects changed).
- Power-up after other parameter values have been loaded (e.g. p0976 = 10).
- Upgrade firmware to later version.
3.1.2 **Explanation of the list of faults and alarms**

The data in the following example has been chosen at random. The information listed below is the maximum amount of information that a description can contain. Some of the information is optional.

The list of faults and alarms (See Section 3.2) is structured as follows:

---

**Start of example**

<table>
<thead>
<tr>
<th>Axxxxx (F, N)</th>
<th>Fault location (optional): Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Drive object:</td>
<td>List of objects.</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledgment:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>Description of possible causes.</td>
</tr>
<tr>
<td>Fault value (r0949, interpret format): or alarm value (r2124, interpret format):</td>
<td>Information about fault or alarm values (optional).</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Description of possible remedies.</td>
</tr>
<tr>
<td>Reaction to F:</td>
<td>A_INFEED: OFF2 (OFF1, NONE)</td>
</tr>
<tr>
<td></td>
<td>SERVO: NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td></td>
<td>VECTOR: NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledgment for F:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Reaction to N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledgment for N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

---

**End of example**

Axxxxx  Alarm xxxxx
Axxxxx (F, N)  Alarm xxxxx (message type can be changed to F or N)
Fxxxxx  Fault xxxxx
Fxxxxx (A, N)  Fault xxxxx (message type can be changed to F or N)
Nxxxxx  No message
Nxxxxx (A)  No message (message type can be changed to A)
Cxxxxx  Safety message (separate message buffer)

A message comprises a letter followed by the relevant number. The meaning of the letters is as follows:

- A means "Alarm".
- F means "Fault".
- N means "No message" or "Internal message" ("No report")
- C means "Safety message"

The optional brackets indicate whether the type specified for this message can be changed and which message types can be adjusted via parameters (p2118, p2119).

Information on reaction and acknowledgement is specified independently for a message with an adjustable message type (e.g. reaction to F, acknowledgement for F).
Note:
You can change the default properties of a fault or alarm by setting parameters.
The list of faults and alarms (see Section 3.2) provides information in relation to the properties of a message that have been set as standard. If the properties of a specific message are changed, the corresponding information may have to be modified in this list.

Fault location (optional): Name
The fault location (optional), the name of the fault or alarm and the message number are all used to identify the message (e.g. with the commissioning software).

Message value:
The information provided under the message value tells you about the composition of the fault/alarm value.

Example:
Message value: Component number: %1, fault cause: %2
This message value contains information about the component number and fault cause. The entries %1 and %2 are placeholders, which are filled appropriately in online operation (e.g. with the commissioning software).

Drive object:
Each message (fault/alarm) specifies the drive object in which it can be found.
A message can belong to either one, several, or all drive objects.

Reaction: Default fault reaction (adjustable fault reaction)
Specifies the default reaction in the event of a fault.
The optional brackets indicate whether the default fault reaction can be changed and which fault reactions can be adjusted via parameters (p2100, p2101).

Note:
See Section 3.1.1

Acknowledgement: Default acknowledgement (adjustable acknowledgement)
Specifies the default method of acknowledging faults after the cause has been eliminated.
The optional brackets indicate whether the default acknowledgement can be changed and which acknowledgement can be adjusted via parameters (p2126, p2127).

Note:
See Section 3.1.1
Overview of faults and alarms

Cause:

Describes the possible causes of the fault/alarm. A fault or alarm value can also be specified (optional).

Fault value (r0949, format):
The fault value is entered in the fault buffer in r0949[0...63] and specifies additional, more precise information about a fault.

Alarm value (r2124, format):
The alarm value specifies additional, more precise information about an alarm.
The alarm value is entered in the alarm buffer in r2124[0...7] and specifies additional, more precise information about an alarm.

Remedy:

Describes the methods available for eliminating the cause of the active fault or alarm.

Alarm

In certain cases, service and maintenance personnel are responsible for choosing a suitable method to eliminate the cause of faults.
### 3.1.3 Number ranges of faults and alarms

Note:
The following number ranges represent an overview of all faults and alarms used in the SINAMICS drive family.

The faults and alarms for the product described in this List Manual are described in detail in Section 3.2.

Faults and alarms are organized into the following number ranges:

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>3999</td>
<td>Control Unit</td>
</tr>
<tr>
<td>4000</td>
<td>4999</td>
<td>Reserved</td>
</tr>
<tr>
<td>5000</td>
<td>5999</td>
<td>Power unit</td>
</tr>
<tr>
<td>6000</td>
<td>6899</td>
<td>Infeed</td>
</tr>
<tr>
<td>6900</td>
<td>6999</td>
<td>Braking Module</td>
</tr>
<tr>
<td>7000</td>
<td>7999</td>
<td>Drive</td>
</tr>
<tr>
<td>8000</td>
<td>8999</td>
<td>Option Board</td>
</tr>
<tr>
<td>9000</td>
<td>12999</td>
<td>Reserved</td>
</tr>
<tr>
<td>13000</td>
<td>13010</td>
<td>Licensing</td>
</tr>
<tr>
<td>13002</td>
<td>19999</td>
<td>Reserved</td>
</tr>
<tr>
<td>20000</td>
<td>29999</td>
<td>OEM</td>
</tr>
<tr>
<td>30000</td>
<td>30999</td>
<td>DRIVE-CLiQ component power unit</td>
</tr>
<tr>
<td>31000</td>
<td>31999</td>
<td>DRIVE-CLiQ component encoder 1</td>
</tr>
<tr>
<td>32000</td>
<td>32999</td>
<td>DRIVE-CLiQ component encoder 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.</td>
</tr>
<tr>
<td>33000</td>
<td>33999</td>
<td>DRIVE-CLiQ component encoder 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: Faults that occur are automatically output as an alarm if the encoder is parameterized as a direct measuring system and does not intervene in the motor control.</td>
</tr>
<tr>
<td>34000</td>
<td>34999</td>
<td>Voltage Sensing Module (VSM)</td>
</tr>
<tr>
<td>35000</td>
<td>35199</td>
<td>Terminal Module 54F (TM54F)</td>
</tr>
<tr>
<td>35200</td>
<td>35999</td>
<td>Terminal Module 31 (TM31)</td>
</tr>
<tr>
<td>36000</td>
<td>36999</td>
<td>DRIVE-CLiQ Hub Module</td>
</tr>
</tbody>
</table>
### Table 3-4  Number ranges of faults and alarms, continued

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>40000</td>
<td>40999</td>
<td>Controller Extension 32 (CX32)</td>
</tr>
<tr>
<td>41000</td>
<td>48999</td>
<td>Reserved</td>
</tr>
<tr>
<td>49000</td>
<td>49999</td>
<td>SINAMICS GM/SM/GL</td>
</tr>
<tr>
<td>50000</td>
<td>50499</td>
<td>Communication Board (COMM BOARD)</td>
</tr>
<tr>
<td>50500</td>
<td>59999</td>
<td>OEM Siemens</td>
</tr>
<tr>
<td>60000</td>
<td>65535</td>
<td>SINAMICS DC MASTER (DC control)</td>
</tr>
</tbody>
</table>
3.2 List of faults and alarms


F01000 Internal software error
Message value: %1
Drive object: All objects
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- evaluate fault buffer (r0945).
- carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

F01001 FloatingPoint exception
Message value: %1
Drive object: All objects
Reaction: OFF2
Acknowledge: POWER ON
Cause: An exception occurred during an operation with the FloatingPoint data type.
The error may be caused by the base system or an OA application (e.g., FBLOCKS, DCC).
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Note:
Refer to r9999 for further information about this fault.
r9999[0]: Fault number.
r9999[1]: Program counter at the time when the exception occurred.
r9999[2]: Cause of the FloatingPoint exception.
Bit 0 = 1: Operation invalid
Bit 1 = 1: Division by zero
Bit 2 = 1: Overflow
Bit 3 = 1: Underflow
Bit 4 = 1: Imprecise result
Remedy:
- carry out a POWER ON (power off/on) for all components.
- check configuration and signals of the blocks in FBLOCKS.
- check configuration and signals of DCC charts.
- upgrade firmware to later version.
- contact the Hotline.

F01002 Internal software error
Message value: %1
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: An internal software error has occurred.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01003</td>
<td>Acknowledgement delay when accessing the memory</td>
<td>%1</td>
<td>All objects</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>A memory area was accessed that does not return a &quot;READY&quot;. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.</td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
</tr>
<tr>
<td>N01004 (F, A)</td>
<td>Internal software error</td>
<td>%1</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>An internal software error has occurred. Fault value (r0949, hexadecimal): Only for internal Siemens troubleshooting.</td>
<td>- read out diagnostics parameter (r9999).</td>
</tr>
<tr>
<td>F01005</td>
<td>Firmware download for DRIVE-CLiQ component unsuccessful</td>
<td>Component number: %1, fault cause: %2</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>It was not possible to download the firmware to a DRIVE-CLiQ component. Fault value (r0949, interpret hexadecimal): DRIVE-CLiQ component has detected a checksum error.</td>
<td>- contact the Hotline.</td>
</tr>
</tbody>
</table>

#### Cause
- yyyyhex: yy = component number, xxxx = fault cause
- xxxx = 000B hex = 11 dec: DRIVE-CLiQ component has detected a checksum error.
- xxxx = 000F hex = 15 dec: The selected DRIVE-CLiQ component did not accept the contents of the firmware file.
- xxxx = 0012 hex = 18 dec: Firmware version is too old and is not accepted by the component.
- xxxx = 0013 hex = 19 dec: Firmware version is not suitable for the hardware release of the component.
- xxxx = 0065 hex = 101 dec: After several communication attempts, no response from the DRIVE-CLiQ component.
- xxxx = 008B hex = 139 dec: Initially, a new boot loader is loaded (must be repeated after POWER ON).
- xxxx = 008C hex = 140 dec: Firmware file for the DRIVE-CLiQ component not available on the memory card.
- xxxx = 008D hex = 141 dec: An inconsistent length of the firmware file was signaled. The firmware download may have been caused by a loss of connection to the firmware file. This can occur during a project download/reset in the case of a SINAMICS Integrated Control Unit, for example.
- xxxx = 008F hex = 143 dec: Component has not changed to the mode for firmware download. It was not possible to delete the existing firmware.
- xxxx = 0090 hex = 144 dec: When checking the firmware that was downloaded (checksum), the component detected a fault. It is possible that the file on the memory card is defective.
Faults and alarms

List of faults and alarms

xxxx = 0091 hex = 145 dec:
Checking the loaded firmware (checksum) was not completed by the component in the appropriate time.
xxxx = 009C hex = 156 dec:
Component with the specified component number is not available (P7828).
xxxx = Additional values:
Only for internal Siemens troubleshooting.

Remedy:
- check the selected component number (P7828).
- check the DRIVE-CLiQ connection.
- save suitable firmware file for download in the directory "\siemens\sinamics\code\sac".
- use a component with a suitable hardware version
- after POWER ON has been carried out again for the DRIVE-CLiQ component, download the firmware again.
Depending on P7826, the firmware will be automatically downloaded.

A01006 Firmware update for DRIVE-CLiQ component required
Message value: Component number: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The firmware of a DRIVE-CLiQ component must be updated as there is no suitable firmware or firmware version in
the component for operation with the Control Unit.
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.

Remedy: Firmware update using the commissioning software:
The firmware version of all of the components on the "Version overview" page can be read in the Project Navigator
under "Configuration" of the associated drive unit and an appropriate firmware update can be carried out.
Firmware update via parameter:
- take the component number from the alarm value and enter into P7828.
- start the firmware download with P7829 = 1.

A01007 POWER ON for DRIVE-CLiQ component required
Message value: Component number: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ component must be powered up again (POWER ON) (e.g. due to a firmware update).
Alarm value (r2124, interpret decimal):
Component number of the DRIVE-CLiQ component.
Note: For a component number = 1, a POWER ON of the Control Unit is required.

Remedy: - Switch off the power supply of the specified DRIVE-CLiQ component and switch it on again.
- For SINUMERIK, auto commissioning is prevented. In this case, a POWER ON is required for all components and
the auto commissioning must be restarted.

A01009 (N) CU: Control module overtemperature
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r0037[0]) of the control module (Control Unit) has exceeded the specified limit value.

Remedy: - check the air intake for the Control Unit.
- check the Control Unit fan.
Note: The alarm automatically disappears after the limit value has been undershot.

Reaction upon N: NONE
Acknowl. upon N: NONE
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01010</td>
<td>Drive type unknown</td>
</tr>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>An unknown drive type was found.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>Drive object number (refer to p0101, p0107).</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- replace Power Module.</td>
</tr>
<tr>
<td></td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
</tr>
<tr>
<td></td>
<td>- upgrade firmware to later version.</td>
</tr>
<tr>
<td></td>
<td>- contact the Hotline.</td>
</tr>
<tr>
<td>F01011 (N)</td>
<td>Download interrupted</td>
</tr>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>The project download was interrupted.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>1: The user prematurely interrupted the project download.</td>
</tr>
<tr>
<td></td>
<td>2: The communication cable was interrupted (e.g. cable breakage, cable withdrawn).</td>
</tr>
<tr>
<td></td>
<td>3: The project download was prematurely ended by the commissioning software (e.g. STARTER, SCOUT).</td>
</tr>
<tr>
<td></td>
<td>100: Different versions between the firmware version and project files which were loaded by loading into the file system &quot;Download from card&quot;.</td>
</tr>
<tr>
<td>Note:</td>
<td>The response to an interrupted download is the state &quot;first commissioning&quot;.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check the communication cable.</td>
</tr>
<tr>
<td></td>
<td>- download the project again.</td>
</tr>
<tr>
<td></td>
<td>- boot from previously saved files (power-down/power-up or p0976).</td>
</tr>
<tr>
<td></td>
<td>- when loading into the file system (download from card), use the matching version.</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>F01012 (N)</td>
<td>Project conversion error</td>
</tr>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>When converting the project of an older firmware version, an error occurred.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>Parameter number of the parameter causing the error.</td>
</tr>
<tr>
<td></td>
<td>For fault value = 600, the following applies:</td>
</tr>
<tr>
<td></td>
<td>The temperature evaluation is no longer assigned to the power unit but to the encoder evaluation.</td>
</tr>
<tr>
<td>Note:</td>
<td>Monitoring of the motor temperature is no longer ensured.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Check the parameter indicated in the fault value and correctly adjust it accordingly.</td>
</tr>
<tr>
<td></td>
<td>For fault value = 600:</td>
</tr>
<tr>
<td></td>
<td>Parameter p0600 must be set to the values 1, 2 or 3 in accordance with the assignment of the internal encoder evaluation to the encoder interface.</td>
</tr>
<tr>
<td></td>
<td>Value 1 means: The internal encoder evaluation is assigned to the encoder interface 1 via p0187.</td>
</tr>
<tr>
<td></td>
<td>Value 2 means: The internal encoder evaluation is assigned to the encoder interface 2 via p0188.</td>
</tr>
<tr>
<td></td>
<td>Value 3 means: The internal encoder evaluation is assigned to the encoder interface 3 via p0189.</td>
</tr>
<tr>
<td></td>
<td>- If necessary, the internal encoder evaluation must be assigned to an encoder interface via parameters p0187, p0188 or p0189 accordingly.</td>
</tr>
<tr>
<td></td>
<td>- If necessary, upgrade the firmware to a later version.</td>
</tr>
</tbody>
</table>
**F01015  Internal software error**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF2
- **Acknowledge:** POWER ON

**Cause:**
An internal software error has occurred.

**Fault value (r0949, interpret decimal):**
Only for internal Siemens troubleshooting.

**Remedy:**
- carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

**A01016 (F)  Firmware changed**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE

**Cause:**
At least one firmware file in the directory was illegally changed on the non-volatile memory (memory card/device memory) with respect to the version when shipped from the factory.
Alarm value (r2124, interpret decimal):
0: Checksum of one file is incorrect.
1: File missing.
2: Too many files.
3: Incorrect firmware version.
4: Incorrect checksum of the back-up file.

**Remedy:**
For the non-volatile memory for the firmware (memory card/device memory), restore the delivery condition.

**Note:**
The file involved can be read out using parameter r9925.
The status of the firmware check is displayed using r9926.
See also: r9925 (Firmware file incorrect), r9926 (Firmware check status)

**Reaction upon F:** OFF2
**Acknowl. upon F:** POWER ON

**A01017  Component lists changed**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE

**Cause:**
On the memory card, one file in the directory /SIEMENS/SINAMICS/DATA or /ADDON/SINAMICS/DATA has been illegally changed with respect to that supplied from the factory. No changes are permitted in this directory.
Alarm value (r2124, interpret decimal):
zyx dec: x = Problem, y = Directory, z = File name
x = 1: File does not exist.
x = 2: Firmware version of the file does not match the software version.
x = 3: File checksum is incorrect.
y = 0: Directory /SIEMENS/SINAMICS/DATA/
y = 1: Directory /ADDON/SINAMICS/DATA/
z = 0: File MOTARM.ACX
z = 1: File MOTSRM.ACX
z = 2: File MOTSLM.ACX
z = 3: File ENCDATA.ACX
z = 4: File FILTDATA.ACX
z = 5: File BRKDATA.ACX
z = 6: File DAT_BEAR.ACX
z = 7: File CFG_BEAR.ACX
z = 8: File ENC_GEAR.ACX

**Remedy:**
For the file on the memory card involved, restore the status originally supplied from the factory.
A01020  Writing to RAM disk unsuccessful
Message value:  -
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  A write access to the internal RAM disk was unsuccessful.
Remedy:  Adapt the file size for the system logbook to the internal RAM disk (p9930).
See also:  p9930 (System logbook activation)

F01023  Software timeout (internal)
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  An internal software timeout has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:  - carry out a POWER ON (power off/on) for all components.
- upgrade firmware to later version.
- contact the Hotline.

F01030  Sign-of-life failure for master control
Message value:  -
Drive object:  B_INF, ENC, VECTOR_G
Reaction:  Infeed: OFF1 (NONE, OFF2)
Vector: OFF3 (ENCODER, IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  For active PC master control, no sign-of-life was received within the monitoring time.
The master control was returned to the active BICO interconnection.
Remedy:  Set the monitoring time higher at the PC or, if required, completely disable the monitoring function.
For the commissioning software, the monitoring time is set as follows:
<Drive> -> Commissioning -> Control panel -> Button "Fetch master control" -> A window is displayed to set the mon-
itoring time in milliseconds.
Notice:
The monitoring time should be set as short as possible. A long monitoring time means a late response when the
communication fails!

F01031  Sign-of-life failure for OFF in REMOTE
Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF1 (NONE, OFF2)
Vector: OFF3 (ENCODER, IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  With the "OFF in REMOTE" mode active, no sign-of-life was received within 3 seconds.
Remedy:  - Check the data cable connection at the serial interface for the Control Unit (CU) and operator panel.
- Check the data cable between the Control Unit and operator panel.

A01032 (F)  ACX: all parameters must be saved
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  The parameters of an individual drive object were saved (p0971 = 1), although there is still no backup of all drive
system parameters.
The saved object-specific parameters are not loaded the next time that the system powers up.
For the system to successfully power up, all of the parameters must have been completely backed up.
**Faults and alarms**

**List of faults and alarms**

---

**Alarm value (r2124, interpret decimal):**
Only for internal Siemens troubleshooting.

**Remedy:**
Save all parameters (p0977 = 1 or "copy RAM to ROM").
See also: p0977 (Save all parameters)

**Reaction upon F:**
Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

---

### F01033 Units changeover: Reference parameter value invalid

**Message value:** Parameter: %1

**Drive object:** B_INF, ENC, VECTOR_G

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:**
When changing over the units to the referred representation type, it is not permissible for any of the required reference parameters to be equal to 0.0
Fault value (r0949, parameter):
Reference parameter whose value is 0.0.
See also: p0349 (System of units, motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)

**Remedy:**
Set the value of the reference parameter to a number different than 0.0.

---

### F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

**Message value:** Parameter: %1

**Drive object:** B_INF, ENC, VECTOR_G

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:**
The change of a reference parameter meant that for an involved parameter the selected value was not able to be re-calculated in the per unit representation. The change was rejected and the original parameter value restored.
Fault value (r0949, parameter):
Parameter whose value was not able to be re-calculated.

**Remedy:**
Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.

---

### A01035 (F) ACX: Parameter back-up file corrupted

**Message value:** %1

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
When the Control Unit is booted, no complete data set was found from the parameter back-up files. The last time that the parameterization was saved, it was not completely carried out.
It is possible that the backup was interrupted by switching off or withdrawing the memory card.
Alarm value (r2124, interpret hexadecimal):
ddccbbbaa hex:
aa = 01 hex:
Power up was realized without data backup. The drive is in the factory setting.
aa = 02 hex:
The last available backup data record was loaded. The parameterization must be checked. It is recommended that the parameterization is downloaded again.

dd, cc, bb:
Only for internal Siemens troubleshooting.
See also: p0971 (Save drive object parameters), p0977 (Save all parameters)

**Remedy:**
- Download the project again with the commissioning software.
- save all parameters (p0977 = 1 or "copy RAM to ROM").
See also: p0977 (Save all parameters)
Faults and alarms

List of faults and alarms

**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
**Acknowl. upon F:** IMMEDIATELY

**F01036 (A)**

**ACX: Parameter back-up file missing**

**Message value:** %1
**Drive object:** All objects
**Reaction:** Infeed: NONE (OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY

**Cause:** When downloading the device parameterization, a parameter back-up file PSxxxxyy.ACX associated with a drive object cannot be found.
Fault value (r0949, interpret hexadecimal):
Byte 1: yy in the file name PSxxxxyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2, 3, 4:
Only for internal Siemens troubleshooting.

**Remedy:** If you have saved the project data using the commissioning software, carry out a new download for your project.
Save using the function "Copy RAM to ROM" or with p0977 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
If you have not saved the project data, then first commissioning of the system has to be carried out again.

**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

**F01038 (A)**

**ACX: Loading the parameter back-up file unsuccessful**

**Message value:** %1
**Drive object:** All objects
**Reaction:** Infeed: NONE (OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY

**Cause:** An error has occurred when downloading PSxxxxyy.ACX or PTxxxxyy.ACX files from the non-volatile memory.
Fault value (r0949, interpret hexadecimal):
Byte 1: yy in the file name PSxxxxyy.ACX
yyy = 000 --> consistency back-up file
yyy = 001 ... 062 --> drive object number
yyy = 099 --> PROFIBUS parameter back-up file
Byte 2:
255: Incorrect drive object type.
254: Topology comparison unsuccessful -> drive object type was not able to be identified.
Reasons could be:
- Incorrect component type in the actual topology
- Component does not exist in the actual topology.
- Component not active.
Additional values:
Only for internal Siemens troubleshooting.
Byte 4, 3:
Only for internal Siemens troubleshooting.

**Remedy:**
- If you have saved the project data using the commissioning software, download the project again. Save using the function "Copy RAM to ROM" or with p0977 = 1 so that all of the parameter files are again completely written to the non-volatile memory.
- replace the memory card or Control Unit.
Re byte 2 = 255:
- Correct the drive object type (see p0107).

**Reaction upon A:** NONE
**Acknowl. upon A:** NONE
F01039 (A)  ACX: Writing to the parameter back-up file was unsuccessful

Message value:  \%1

Drive object:  All objects

Reaction:  Infeed: NONE (OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowledge:  IMMEDIATELY

Cause:
Writing to at least one parameter back-up file PSxxxyyy.*** in the non-volatile memory was unsuccessful.
- In the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxyyy.*** has the "read only" file attribute and cannot be overwritten.
- There is not sufficient free memory space available.
- The non-volatile memory is defective and cannot be written to.

Fault value (r0949, interpret hexadecimal):
dcba hex
a = yyy in the file names PSxxxyyy.***
a = 000 --> consistency back-up file
a = 001 ... 062 --> drive object number
a = 070 --> FEPROM.BIN
a = 080 --> DEL4BOOT.TXT
a = 099 --> PROFIBUS parameter back-up file
b = xxx in the file names PSxxxyyy.***
b = 000 --> data save started with p0977 = 1 or p0971 = 1
b = 010 --> data save started with p0977 = 10
b = 011 --> data save started with p0977 = 11
b = 012 --> data save started with p0977 = 12

d, c:
Only for internal Siemens troubleshooting.

Remedy:  
- check the file attribute of the files (PSxxxyyy.***, CAxxxyyy.***, CCxxxyyy.*** and, if required, change from "read only" to "writeable".  
- check the free memory space in the non-volatile memory. Approx. 80 kbyte of free memory space is required for every drive object in the system.
- replace the memory card or Control Unit.

Reaction upon A:  NONE
Acknowl. upon A:  NONE

F01040  Save parameter settings and carry out a POWER ON

Message value:  -


Reaction:  OFF2

Acknowledge:  POWER ON

Cause:  A parameter was changed in the drive system which means that it is necessary to save the parameters and re-boot.

Remedy:  
- save the parameters (p0971/p0977).
- carry out a POWER ON (power off/on) for all components.

Then:
- upload the drive unit (commissioning software).

F01040  Save parameter settings and carry out a POWER ON

Message value:  -

Drive object:  VECTOR_G

Reaction:  OFF2

Acknowledge:  POWER ON

Cause:  A parameter was changed in the drive system which means that it is necessary to save the parameters and re-boot.
Examples:
- p1810.2 (wobulation of the pulse frequency) and p1802 (edge modulation)
- p1750.5 (cl.-loop control mode PESM up to f=0Hz with HF signal injection)
### F01041 Parameter save necessary

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** Defective or missing files were detected on the memory card when booting.  
- Source file cannot be opened.  
- Source file cannot be read.  
- Target directory cannot be set up.  
- Target file cannot be set up/opened.  
- Target file cannot be written to.  
**Remedy:**  
- save the parameters.  
- download the project again to the drive unit.  
- update the firmware  
- if required, replace the Control Unit and/or memory card card.  

### F01042 Parameter error during project download

**Message value:** Parameter: %1, Index: %2, fault cause: %3  
**Drive object:** All objects  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
**Acknowledge:** IMMEDIATELY  
**Cause:** An error was detected when downloading a project using the commissioning software (e.g. incorrect parameter value).  
For the specified parameter, it was detected that dynamic limits were exceeded that may possibly depend on other parameters.  
Fault value (r0949, interpret hexadecimal):  
- Parameter = aaaa  
- Index = bb  
- Fault cause = cc  
- 0: Parameter number illegal.  
- 1: Parameter value cannot be changed.  
- 2: Lower or upper value limit exceeded.  
- 3: Sub-index incorrect.  
- 4: No array, no sub-index.  
- 5: Data type incorrect.  
- 6: Setting not permitted (only resetting).  
- 7: Descriptive element cannot be changed.  
- 9: Descriptive data not available.  
- 11: No master control.  
- 15: No text array available.  
- 17: Task cannot be executed due to operating state.  
- 20: Illegal value.  
- 21: Response too long.  
- 22: Parameter address illegal.  
- 23: Format illegal.  
- 24: Number of values not consistent.  
- 25: Drive object does not exist.  
- 101: Presently de-activated.  
- 104: Illegal value.  
- 107: Write access not permitted when controller enabled.
Faults and alarms

List of faults and alarms

108: Unit unknown.
109: Write access only in the commissioning state, encoder (p0010 = 4).
110: Write access only in the commissioning state, motor (p0010 = 3).
111: Write access only in the commissioning state, power unit (p0010 = 2).
112: Write access only in the quick commissioning mode (p0010 = 1).
113: Write access only in the ready mode (p0010 = 0).
114: Write access only in the commissioning state, parameter reset (p0010 = 30).
115: Write access only in the Safety Integrated commissioning state (p0010 = 95).
116: Write access only in the commissioning state, technological application/units (p0010 = 5).
117: Write access only in the commissioning state (p0010 not equal to 0).
118: Write access only in the commissioning state, download (p0010 = 29).
119: Parameter may not be written in download.
120: Write access only in the commissioning state, drive basic configuration (device: p0009 = 3).
121: Write access only in the commissioning state, define drive type (device: p0009 = 2).
122: Write access only in the commissioning state, data set basic configuration (device: p0009 = 4).
123: Write access only in the commissioning state, device configuration (device: p0009 = 1).
124: Write access only in the commissioning state, device download (device: p0009 = 29).
125: Write access only in the commissioning state, device parameter reset (device: p0009 = 3).
126: Write access only in the commissioning state, device ready (device: p0009 = 0).
127: Write access only in the commissioning state, device (device: p0009 not equal to 0).
129: Parameter may not be written in download.
130: Transfer of the master control is inhibited via binector input p0806.
131: Required BICO interconnection not possible because BICO output does not supply floating value
132: Free BICO interconnection inhibited via p0922.
133: Access method not defined.
200: Below the valid values.
201: Above the valid values.
202: Cannot be accessed from the Basic Operator Panel (BOP).
203: Cannot be read from the Basic Operator Panel (BOP).
204: Write access not permitted.

Remedy:
- enter the correct value in the specified parameter.
- identify the parameter that restricts the limits of the specified parameter.

F01043 Fatal error at project download
Message value: Fault cause: %1
Drive object: All objects
Reaction: Infeed: OFF2 (OFF1)
Vector: OFF2 (OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A fatal error was detected when downloading a project using the commissioning software. Fault value (r0949, interpret decimal):
1: Device status cannot be changed to Device Download (drive object ON?).
2: Incorrect drive object number.
3: A drive object that has already been deleted is deleted again.
4: Deleting of a drive object that has already been registered for deletion.
5: Deleting a drive object that does not exist.
6: Generating an undeleted drive object that already existed.
7: Regenerating a drive object already registered for generation.
8: Maximum number of drive objects that can be generated exceeded.
9: Error while generating a drive object.
10: Error while generating target topology parameters (p9902 and p9903).
11: Error while generating a drive object (global component).
12: Error while generating a drive object (drive component).
13: Unknown drive object type.
14: Drive status cannot be changed to "ready for operation" (p0947 and p0949).
15: Drive status cannot be changed to drive download.
16: Device status cannot be changed to "ready for operation".
17: It is not possible to download the topology. The component wiring should be checked, taking into account the various messages/signals.
18: A new download is only possible if the factory settings are restored for the drive unit.
19: The slot for the option module has been configured several times (e.g. CAN and COMM BOARD)
20: The configuration is inconsistent (e.g. CAN for Control Unit, however no CAN configured for drive objects A_INF, SERVO or VECTOR).
21: Error when accepting the download parameters.
22: Software-internal download error.

Additional values: only for internal Siemens troubleshooting.

Remedy:
- use the current version of the commissioning software.
- modify the offline project and carry out a new download (e.g. compare the number of drive objects, motor, encoder, power unit in the offline project and at the drive).
- change the drive state (is a drive rotating or is there a message/signal?).
- carefully note any other messages/signals and remove their cause.
- boot from previously saved files (power-down/power-up or p0976).

F01044 CU: Descriptive data error

Message value: %1
Drive object: All objects
Reaction: OFF2
Acknowledge: POWER ON
Cause: An error was detected when loading the descriptive data saved in the non-volatile memory.
Remedy: Replace the memory card or Control Unit.

A01045 CU: Configuring data invalid

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: An error was detected when evaluating the parameter files PSxxxxxx.ACX, PTxxxxxx.ACX, CAxxxxxx.ACX, or CCxxxxxx.ACX saved in the non-volatile memory. Because of this, under certain circumstances, several of the saved parameter values were not able to be accepted. Also see r9406 up to r9408.
Alarm value (r2124, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy: - Check the parameters displayed in r9406 up to r9408, and correct these if required.
- Restore the factory setting using (p0976 = 1) and re-load the project into the drive unit.
Then save the parameterization in STARTER using the "Copy RAM to ROM" function or with p0977 = 1. This over-
writes the incorrect parameter files in the non-volatile memory – and the alarm is withdrawn.

A01049 CU: It is not possible to write to file

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to write into a write-protected file (PSxxxxxx.acx). The write request was interrupted.
Alarm value (r2124, interpret decimal):
Drive number.
Remedy: Check whether the "write protected" attribute has been set for the files in the non-volatile memory under ...
USER/SINAMICS/DATA/...
When required, remove write protection and save again (e.g. set p0977 to 1).

F01050 Memory card and device incompatible

Message value: -
Drive object: All objects
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The memory card and the device type do not match (e.g. a memory card for SINAMICS S is inserted in SINAMICS G).
Remedy: - insert the matching memory card.
- use the matching Control Unit or power unit.
**F01054**  **CU: System limit exceeded**  
**Message value:** %1  
**Drive object:** All objects  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** At least one system overload has been identified. 
Fault value (r0949, interpret decimal):  
1: Computing time load too high (r9976[1]).  
5: Peak load too high (r9976[5]).  
See also: r9976 (System utilization)  
**Remedy:**  
- reduce the computing time load of the drive unit (r9976[1] and r9976[5]) to under 100%.  
- check the sampling times and adjust if necessary (p0115, p0799, p4099).  
- de-activate function modules.  
- de-activate drive objects.  
- remove drive objects from the target topology.  
- note the DRIVE-CLiQ topology rules and if required, change the DRIVE-CLiQ topology.  
When using the Drive Control Chart (DCC) or free function blocks (FBLOCKS), the following applies:  
- the computing time load of the individual run-time groups on a drive object can be read out in r21005 (DCC) or r20005 (FBLOCKS).  
- if necessary, the assignment of the run-time group (p21000, p20000) can be changed in order to increase the sampling time (r21001, r20001).  
- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).  

**F01055**  **CU: Internal error (SYNO of port and application not identical)**  
**Message value:** %1  
**Drive object:** B_INF, TM150, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** All applications that operate with slaves at one port must be derived from the same SYNO clock cycle.  
The first application whose registration (log-on) connects a slave to a port defines the SYNO clock cycle that will be used as basis for the port.  
Fault value (r0949, interpret hexadecimal): Method ID.  
Note: Only for internal Siemens troubleshooting.  
**Remedy:** Contact the Hotline.  

**F01056**  **CU: Internal error (clock cycle of parameter group already assigned differently)**  
**Message value:** %1  
**Drive object:** B_INF, TM150, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The requested parameter group (IREG, NREG, ...) is already being used in a different clock cycle.  
Fault value (r0949, interpret hexadecimal): Method ID.  
Note: Only for internal Siemens troubleshooting.  
**Remedy:** Contact the Hotline.  

**F01057**  **CU: Internal error (different DRIVE-CLiQ type for the slave)**  
**Message value:** %1  
**Drive object:** B_INF, TM150, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The requested DRIVE-CLiQ type (hps_ps, hps_enc, ...) has been specified differently for the same slave component.  
Fault value (r0949, interpret hexadecimal): Method ID.
F01058  CU: Internal error (slave missing in topology)
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested slave component does not exist in the topology.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note: Only for internal Siemens troubleshooting.
Remedy: Contact the Hotline.

F01059  CU: Internal error (port does not exist)
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The port object assigned according to the topology of the requested slave component does not exist.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note: Only for internal Siemens troubleshooting.
Remedy: Contact the Hotline.

F01060  CU: Internal error (parameter group not available)
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested parameter group (IREG, NREG, ...) is not offered by this slave type.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note: Only for internal Siemens troubleshooting.
Remedy: Contact the Hotline.

F01061  CU: Internal error (application not known)
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An application that is not registered with TSM has attempted to register with registerSlaves().
The cause can be an unsuccessful TSM registration or an incorrect registration sequence. It is always necessary to
log in to the TSM before registerSlaves() can be used.
Fault value (r0949, interpret hexadecimal):
Method ID.
Note: Only for internal Siemens troubleshooting.
Remedy: Contact the Hotline.
### F01063  CU: Internal error (PDM)

- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** An internal software error has occurred.  
  Fault value (r0949, interpret hexadecimal):  
  Method ID.  
  Note:  
  Only for internal Siemens troubleshooting.
- **Remedy:** Contact the Hotline.

### A01064 (F)  CU: Internal error (CRC)

- **Message value:** -  
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** CRC error in the Control Unit program memory
- **Remedy:**  
  - carry out a POWER ON (power off/on) for all components.  
  - upgrade firmware to later version.  
  - contact the Hotline.
- **Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
  Vector: NONE (OFF1, OFF2, OFF3, STOP2)
- **Acknowl. upon F:** IMMEDIATELY (POWER ON)

### F01068  CU: Data memory, memory overflow

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** The utilization for a data memory area is too large.  
  Fault value (r0949, interpret binary):  
  - Bit 0 = 1: High-speed data memory 1 overloaded  
  - Bit 1 = 1: High-speed data memory 2 overloaded  
  - Bit 2 = 1: High-speed data memory 3 overloaded  
  - Bit 3 = 1: High-speed data memory 4 overloaded
- **Remedy:**  
  - de-activate the function module.  
  - de-activate drive object.  
  - remove the drive object from the target topology.

### A01069  Parameter backup and device incompatible

- **Message value:** -  
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The parameter backup on the memory card and the drive unit do not match.  
  The module boots with the factory settings.  
  Example:  
  Devices A and B. are not compatible and a memory card with the parameter backup for device A is inserted in device B.
- **Remedy:**  
  - insert a memory card with compatible parameter backup and carry out a POWER ON.  
  - insert a memory card without parameter backup and carry out a POWER ON.  
  - save the parameters (p0977 = 1).
F01070  Project/firmware is being downloaded to the memory card

Message value:  %1
Drive object:  All objects
Reaction:  OFF2
Acknowledge:  IMMEDIATELY
Cause:  An upgrade (project/firmware download) was initiated on the memory card. While this fault is present, the corresponding update takes place with plausibility and consistency checks. After this, depending on the command option, a new boot (reset) for the Control Unit is initiated.
Caution:  During the upgrade and while this fault is present, it is not permissible to switch off the Control Unit. If the operation is interrupted, this can destroy the file system on the memory card. The memory card will then no longer work properly and must be repaired.
Remedy:  Not necessary. The fault automatically disappears after the upgrade has been completed.

A01099  Tolerance window of time synchronization exited

Message value:  -
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  The time master exited the selected tolerance window for time synchronization.
See also:  p3109 (RTC real time synchronization, tolerance window)
Remedy:  Select the re-synchronization interval so that the synchronization deviation between the time master and drive system lies within the tolerance window.
See also:  r3108 (RTC last synchronization deviation)

A01100  CU: Memory card withdrawn

Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The memory card (non-volatile memory) was withdrawn during operation.
Notice:  It is not permissible for the memory card to be withdrawn or inserted under voltage.
Remedy:  - power down the drive system.
- re-insert the memory card that was withdrawn - this card must match the drive system.
- power up the drive system again.

F01105 (A)  CU: Insufficient memory

Message value:  %1
Drive object:  All objects
Reaction:  OFF1
Acknowledge:  POWER ON
Cause:  Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, OA applications, blocks, etc).
Fault value (r0949, interpret decimal):  Only for internal Siemens troubleshooting.
Remedy:  - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, OA applications, blocks, etc).
- use an additional Control Unit.
Reaction upon A:  NONE
Acknowl. upon A:  NONE
### F01106 CU: Insufficient memory
- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** There is not sufficient free memory space available.
- **Remedy:** Not necessary.

### F01107 CU: Data save in the non-volatile memory unsuccessful
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** A data save in the non-volatile memory was not able to be successfully carried out.
  - non-volatile memory is defective.
  - insufficient space in the non-volatile memory.
  - Fault value (r0949, interpret decimal):
  - Only for internal Siemens troubleshooting.
- **Remedy:**
  - try to save again.
  - replace the memory card or Control Unit.

### F01110 CU: More than one SINAMICS G on one Control Unit
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** More than one SINAMICS G type power unit is being operated from the Control Unit.
  - Fault value (r0949, interpret decimal):
  - Number of the second drive with a SINAMICS G type power unit.
- **Remedy:** Only one SINAMICS G drive type is permitted.

### F01111 CU: Mixed operation of drive units illegal
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** Illegal operation of various drive units on one Control Unit:
  - SINAMICS S together with SINAMICS G
  - SINAMICS S together with SINAMICS S Value or Combi
  - Fault value (r0949, interpret decimal):
  - Number of the first drive object with a different power unit type.
- **Remedy:** Only power units of one particular drive type may be operated with one Control Unit.

### F01112 CU: Power unit not permissible
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** The connected power unit cannot be used together with this Control Unit.
  - Fault value (r0949, interpret decimal):
  - 1: Power unit is not supported (e.g. PM240).
  - 2: DC/AC power unit connected to CU310 not permissible.
  - 3: Power unit (S120M) not permitted for vector control.
- **Remedy:** Replace the power unit that is not permissible by a component that is permissible.
### F01120 (A) Terminal initialization has failed

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1 (OFF2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** An internal software error occurred while the terminal functions were being initialized.
- **Fault value (r0949, interpret hexadecimal):**
  - Only for internal Siemens troubleshooting.
- **Remedy:**
  - carry out a POWER ON (power off/on) for all components.
  - upgrade firmware to later version.
  - contact the Hotline.
  - replace the Control Unit.
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE

### F01122 (A) Frequency at the measuring probe input too high

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1 (OFF2)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The frequency of the pulses at the measuring probe input is too high.
- **Fault value (r0949, interpret decimal):**
  - 1: DI/DO 9 (X122.8)
  - 2: DI/DO 10 (X122.10)
  - 4: DI/DO 11 (X122.11)
  - 8: DI/DO 13 (X132.8)
  - 16: DI/DO 14 (X132.10)
  - 32: DI/DO 15 (X132.11)
  - 64: DI/DO 8 (X122.7)
  - 128: DI/DO 12 (X132.7)
- **Remedy:** Reduce the frequency of the pulses at the measuring probe input.
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE

### F01150 CU: Number of instances of a drive object type exceeded

- **Message value:** Drive object type: %1, number permitted: %2, actual number: %3
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** The maximum permissible number of instances of a drive object type was exceeded.
- **Drive object type:** Drive object type (p0107), for which the maximum permissible number of instances was exceeded.
- **Number permitted:** Max. permissible number of instances for this drive object type.
- **Actual number:** Current number of instances for this drive object type.
- **Note regarding the message value:**
  - The individual information is coded as follows in the message value (r0949/r2124):
  - ddcbbbaa hex: aa = drive object type, bb = number limited, cc = actual number, dd = no significance
- **Remedy:**
  - power down the unit.
  - suitably restrict the number of instances of a drive object type by reducing the number of inserted components.
  - re-commission the unit.
F01151  CU: Number of drive objects of a category exceeded  
Message value:  Drive object category: %1, number permitted: %2, actual number: %3  
Drive object:  All objects  
Reaction:  NONE  
Acknowledge:  IMMEDIATELY  
Cause:  The maximum permissible number of drive objects of a category was exceeded.  
Drive object category:  Drive object category, for which the maximum permissible number of drive objects was exceeded.  
Number permitted:  Max. permissible number for this drive object category.  
Actual number:  Actual number for this drive object category.  
Note regarding the message value:  The individual information is coded as follows in the message value (r0949/r2124):  
ddccbbaa hex:  
aa = drive object category,  
bb = number limited,  
cc = actual number,  
dd = no significance  
Remedy:  
- power down the unit.  
- suitably restrict the number of drive objects of the specified category by reducing the number of inserted components.  
- re-commission the unit.  

F01200  CU: Time slice management internal software error  
Message value:  %1  
Drive object:  All objects  
Reaction:  OFF2  
Acknowledge:  IMMEDIATELY (POWER ON)  
Cause:  A time slice management error has occurred.  
It is possible that the sampling times have been inadmissibly set.  
Fault value (r0949, interpret hexadecimal):  
998:  
Too many time slices occupied by OA (e.g. DCC).  
999:  
Too many time slices occupied by the basic system. Too many different sampling times may have been set.  
Additional values:  
Only for internal Siemens troubleshooting.  
Remedy:  
- check the sampling time setting (p0112, p0115, p4099, p9500, p9511).  
- contact the Hotline.  

F01205  CU: Time slice overflow  
Message value:  %1  
Drive object:  All objects  
Reaction:  OFF2  
Acknowledge:  POWER ON  
Cause:  Insufficient processing time is available for the existing topology.  
Fault value (r0949, interpret hexadecimal):  
Only for internal Siemens troubleshooting.  
Remedy:  
- reduce the number of drives.  
- increase the sampling times.  

F01221  CU: Bas clk cyc too low  
Message value:  %1  
Drive object:  All objects  
Reaction:  NONE  
Acknowledge:  IMMEDIATELY  
Cause:  The closed-loop control / monitoring cannot maintain the envisaged clock cycle.  
The runtime of the closed-loop control/monitoring is too long for the particular clock cycle or the computing time remaining in the system is not sufficient for the closed-loop control/monitoring.  
Fault value (r0949, interpret hexadecimal):  
Only for internal Siemens troubleshooting.
### Remedy:
Increase the basic clock cycle of DRIVE-CLiQ communication.
See also: p0112 (Sampling times pre-setting p0115)

### F01222
CU: Basic clock cycle too low (computing time for communication not available)

- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - A time slice has not been defined that fulfills the requirements.
  - The port cannot be correctly operated as the alternating cyclic clock cycle cannot be maintained.

#### Fault value (r0949, interpret hexadecimal):
- Method ID.

#### Note:
Only for internal Siemens troubleshooting.

### A01223
CU: Sampling time inconsistent

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  - When changing a sampling time (p0115[0], p0799 or p4099), inconsistency between the clock cycles has been identified.
  - Alarm value (r2124, interpret decimal):
    - 1: Value lower than minimum value.
    - 2: Value higher than maximum value.
    - 3: Value not a multiple of 1.25 µs.
    - 4: Value does not match clock-cycle synchronous PROFIBUS operation.
    - 5: Value not a multiple of 125 µs.
    - 6: Value not a multiple of 250 µs.
    - 7: Value not a multiple of 375 µs.
    - 8: Value not a multiple of 400 µs.
    - 10: Special restriction of the drive object violated.
    - 20: On a SERVO with a sampling time of 62.5 µs, more than two drive objects or one drive object of a type other than SERVO have been detected on the same DRIVE-CLiQ line (a maximum of two SERVO type drive objects are permitted).
    - 21: Value can be a multiple of the current controller sampling time of a servo or vector drive in the system (e.g. for TB30, the values of all of the indices should be taken into account).
    - 30: Value less than 31.25 µs.
    - 31: Value less than 62.5 µs (31.25 µs is not supported for SMC10, SMC30, SM110 and Double Motor Modules).
    - 32: Value less than 125 µs.
    - 33: Value less than 250 µs.
    - 40: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 125 µs. Further, none of the nodes has a sampling time of less than 125 µs.
    - 41: A chassis unit was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 125 µs.
    - 42: An Active Line Module was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 125 µs.
    - 43: A Voltage Sensing Module (VSM) was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is not equal to the current controller sampling time of the drive object of the VSM.
    - 44: The highest common denominator of the sampling times of all of the components connected to the DRIVE-CLiQ line is not the same for all components of this drive object (e.g. there are components on different DRIVE-CLiQ lines on which different highest common denominators are generated).
    - 45: A chassis parallel unit was identified on the DRIVE-CLiQ line as a node. Further, the highest common denominator of the sampling times of all of the nodes connected to the line is less than 162.5 µs or 187.5 µs (for a 2 or 3x parallel connection).
    - 46: A node has been identified on the DRIVE-CLiQ line whose sampling time is not a multiple of the lowest sampling time on this line.
    - 52: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 31.25 µs.
Faults and alarms

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54: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 62.5 µs.
56: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 125 µs.
58: Nodes have been identified on the DRIVE-CLiQ line whose highest common denominator of the sampling times is less than 250 µs.
99: Inconsistency of cross drive objects detected.
116: Recommended clock cycle in r0116[0...1].

General note:
The topology rules should be noted when connecting up DRIVE-CLiQ (refer to the appropriate product documentation).
The parameters of the sampling times can also be changed with automatic calculations.
Example for highest common denominator: 125 µs, 125 µs, 62.5 µs --> 62.5 µs

Remedy:
- check the DRIVE-CLiQ cables.
- set a valid sampling time.
See also: p0115, p0799, p4099

A01224 CU: Pulse frequency inconsistent

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: When changing the minimum pulse frequency (p0113) inconsistency between the pulse frequencies was identified.
Alarm value (r2124, interpret decimal):
1: Value lower than minimum value.
2: Value higher than maximum value.
3: Resulting sampling time is not a multiple of 1.25 µs.
4: Value does not match clock-cycle synchronous PROFIBUS operation.
10: Special restriction of the drive object violated.
99: Inconsistency of cross drive objects detected.
116: Recommended clock cycle in r0116[0...1].

Remedy:
Set a valid pulse frequency.
See also: p0113 (Minimum pulse frequency, selection)

F01250 CU: CU-EEPROM incorrect read-only data

Message value: %1
Drive object: All objects
Reaction: NONE (OFF2)
Acknowledge: POWER ON
Cause: Error when reading the read-only data of the EEPROM in the Control Unit.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON.
- replace the Control Unit.

A01251 CU: CU-EEPROM incorrect read-write data

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: Error when reading the read-write data of the EEPROM in the Control Unit.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
For alarm value r2124 < 256, the following applies:
- carry out a POWER ON.
- replace the Control Unit.
For alarm value r2124 >= 256, the following applies:
- for the drive object with this alarm, clear the fault memory (p0952 = 0).
- as an alternative, clear the fault memory of all drive objects (p2147 = 1).
- replace the Control Unit.

---

### F01255
**CU: Option Board EEPROM read-only data error**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE (OFF2)
- **Acknowledge:** POWER ON
- **Cause:** Error when reading the read-only data of the EEPROM in the Option Board.
  - Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.
- **Remedy:**
  - carry out a POWER ON.
  - replace the Control Unit.

### A01256
**CU: Option Board EEPROM read-write data error**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** Error when reading the read-write data of the EEPROM in the Option Board.
  - Fault value (0949, interpret decimal): Only for internal Siemens troubleshooting.
- **Remedy:**
  - carry out a POWER ON.
  - replace the Control Unit.

### F01303
**DRIVE-CLiQ component does not support the required function**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** A function requested by the Control Unit is not supported by a DRIVE-CLiQ component.
  - Fault value (0949, interpret decimal):
    - 1: The component does not support the de-activation.
    - 101: The Motor Module does not support an internal armature short-circuit.
    - 102: The Motor Module does not support the de-activation.
    - 201: The Sensor Module does not support actual value inversion (p0410.0 = 1) when using a Hall sensor (p0404.6 = 1) for the commutation.
    - 202: The Sensor Module does not support parking/unparking.
    - 203: The Sensor Module does not support the de-activation.
    - 204: The firmware of this Terminal Module 15 (TM15) does not support the application TM15DI/DO.
    - 205: The Sensor Module does not support the selected temperature evaluation (r0458).
    - 206: The firmware of this Terminal Modules TM41/TM31/TM15 refers to an old firmware version. It is urgently necessary to upgrade the firmware to ensure disturbance-free operation.
    - 207: The power unit with this hardware version does not support operation with device supply voltages of less than 380 V.
    - 208: The Sensor Module does not support de-selection of commutation with zero mark (via p0430.23).
    - 211: The Sensor Module does not support single-track encoders (r0459.10).
    - 212: The Sensor Module does not support LVDT sensors (p4677.0).
    - 213: The Sensor Module does not support the characteristic type (p4662).
- **Remedy:**
  - Upgrade the firmware of the DRIVE-CLiQ component involved.
  - For fault value = 205:
    - Check parameter p0600 and p0601 and if required, adapt interpretation.
  - For fault value = 207:
    - Replace the power unit or if required set the device supply voltage higher (p0210).
  - For fault value = 208:
    - Check parameter p0430.23 and reset if necessary.
### A01304 (F)
**Firmware version of DRIVE-CLiQ component is not up-to-date**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The non-volatile memory has a more recent firmware version than the one in the connected DRIVE-CLiQ component.
  - Alarm value (r2124, interpret decimal):
  - Component number of the DRIVE-CLiQ component involved.
- **Remedy:** Update the firmware (p7828, p7829 and commissioning software).
- **Reaction upon F:** NONE
- **Acknowl. upon F:** IMMEDIATELY

### F01305
**Topology: Component number missing**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** The component number from the topology was not parameterized (p0121 (for power unit, refer to p0107), p0131 (for servo/vector drives, refer to p0107), p0141, p0151, p0161).
  - Fault value (r0949, interpret decimal):
  - Data set number.
  - Note:
    - The fault also occurs if speed encoders have been configured (p0187 to p0189) but no component numbers exist for them.
    - In this case, the fault value includes the drive data set number plus 100 * encoder number (e.g. 3xx, if a component number was not entered in p0141 for the third encoder (p0189)).
  - See also: p0121, p0131, p0141, p0142, p0151, p0161, p0186, p0187, p0188, p0189

**Remedy:**
- Enter the missing component number or remove the component and restart commissioning.
- See also: p0121, p0131, p0141, p0142, p0151, p0161, p0186, p0187, p0188, p0189

### A01306
**Firmware of the DRIVE-CLiQ component being updated**

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** Firmware update is active for at least one DRIVE-CLiQ component.
  - Alarm value (r2124, interpret decimal):
  - Component number of the DRIVE-CLiQ component.
- **Remedy:** Not necessary.

This alarm automatically disappears after the firmware has been updated.

### A01314
**Topology: Component must not be present**

- **Message value:** Component number: %1, Component class: %2, Connection number: %3
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** For a component, "de-activate and not present" is set but this component is still in the topology.
  - Alarm value (r2124, interpret hexadecimal):
    - ddcbbbaa hex:
      - aa = component number
      - bb = component class of the component
      - cc = connection number
  - Note:
    - Component class and connection number are described in F01375.
Remedy: - remove the corresponding component.
- change the setting "de-activate and not present".
Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
See also: p0105, p0125, p0145, p0155

A01315 Drive object not ready for operation
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: For the active drive object involved, at least one activated component is missing.
Note:
All other active and operational drive objects can be in the "RUN" state.
Remedy: The alarm automatically disappears again with the following actions:
- de-activate the drive object involved (p0105 = 0).
- de-activate the components involved (p0125 = 0, p0145 = 0, p0155 = 0, p0165 = 0).
- re-insert the components involved.
See also: p0105, p0125, p0145, p0155

A01316 Drive object inactive and again ready for operation
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: If, when inserting a component of the target topology, an inactive, non-operational drive object becomes operational again. The associated parameter of the component is, in this case, set to "activate" (p0125, p0145, p0155, p0165).
Note:
This is the only message that is displayed for a de-activated drive object.
Remedy: The alarm automatically disappears again with the following actions:
- activate the drive object involved (p0105 = 1).
- again withdraw the components involved.
See also: p0105 (Activate/de-activate drive object)

A01317 (N) De-activated component again present
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: If a component of the target topology for an active drive object is inserted and the associated parameter of the component is set to "de-activate" (p0125, p0145, p0155, p0165).
Note:
This is the only message that is displayed for a de-activated component.
Remedy: The alarm automatically disappears again with the following actions:
- activate the components involved (p0125 = 1, p0145 = 1, p0155 = 1, p0165 = 1).
- again withdraw the components involved.
See also: p0125 (Activate/de-activate power unit components), p0145 (Activate/de-activate encoder interface), p0155 (Voltage Sensing Module, activate/de-activate)
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A01318  BICO: De-activated interconnections present
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  This alarm is used in the following cases:
- If an inactive/non-operational drive object is active again/ready for operation
- If there are items in the list of Bi/CI parameters (r9498[0...29], r9499[0...29])
- If the BICO interconnections saved in the list of Bi/CI parameters (r9498[0...29], r9499[0...29]) have actually been changed
Remedy:  Reset alarm:
- Set p9496 to 1 or 2
or
- de-activate the drive object again.

A01319  Inserted component not initialized
Message value:  -
Drive object:  B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  Initialization is required for at least one inserted component.
This is only possible if the pulses are inhibited for all the drive objects.
Remedy:  Activate pulse inhibit for all drive objects.

A01320  Topology: Drive object number does not exist in configuration
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  A drive object number is missing in p0978
Alarm value (r2124, interpret decimal):
Index of p0101 under which the missing drive object number can be determined.
Remedy:  Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.

A01321  Topology: Drive object number does not exist in configuration
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  p0978 contains a drive object number that does not exist.
Alarm value (r2124, interpret decimal):
Index of p0978 under which the drive object number can be determined.
Remedy:  Set p0009 to 1 and change p0978:
Rules:
- p0978 must include all of the drive object numbers (p0101).
- it is not permissible for a drive object number to be repeated.
- by entering a 0, the drive objects with PZD are separated from those without PZD.
- only 2 partial lists are permitted. After the second 0, all values must be 0.
- dummy drive object numbers (255) are only permitted in the first partial list.
### A01322
**Topology: Drive object number present twice in configuration**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause:         | A drive object number is present more than once in p0978.  
Alarm value (r2124, interpret decimal):  
Index of p0978 under which the involved drive object number is located. |
| Remedy:        | Set parameter p0009 = 1 and change p0978:  
Rules:  
- p0978 must include all of the drive object numbers (p0101).  
- it is not permissible for a drive object number to be repeated.  
- by entering a 0, the drive objects with PZD are separated from those without PZD.  
- only 2 partial lists are permitted. After the second 0, all values must be 0.  
- dummy drive object numbers (255) are only permitted in the first partial list. |

### A01323
**Topology: More than two partial lists created**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause:         | Partial lists are available more than twice in p0978. After the second 0, all must be 0.  
Alarm value (r2124, interpret decimal):  
Index of p0978 under which the illegal value is located. |
| Remedy:        | Set p0009 to 1 and change p0978:  
Rules:  
- p0978 must include all of the drive object numbers (p0101).  
- it is not permissible for a drive object number to be repeated.  
- by entering a 0, the drive objects with PZD are separated from those without PZD.  
- only 2 partial lists are permitted. After the second 0, all values must be 0.  
- dummy drive object numbers (255) are only permitted in the first partial list. |

### A01324
**Topology: Dummy drive object number incorrectly created**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause:         | In p0978, dummy drive object numbers (255) are only permitted in the first partial list.  
Alarm value (r2124, interpret decimal):  
Index of p0978 under which the illegal value is located. |
| Remedy:        | Set p0009 to 1 and change p0978:  
Rules:  
- p0978 must include all of the drive object numbers (p0101).  
- it is not permissible for a drive object number to be repeated.  
- by entering a 0, the drive objects with PZD are separated from those without PZD.  
- only 2 partial lists are permitted. After the second 0, all values must be 0.  
- dummy drive object numbers (255) are only permitted in the first partial list. |

### F01325
**Topology: Component number not present in target topology**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause:         | The component configured in a parameter (e.g. p0121, p0131, etc.) is not present in the target topology.  
Alarm value (r2124, interpret decimal):  
Configured component number that is not present in target topology. |
| Remedy:        | Establish topology and DO configuration consistency. |
### Faults and alarms

**List of faults and alarms**

<table>
<thead>
<tr>
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<td>A01330</td>
<td>Topology: Quick commissioning not possible</td>
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**Message value:** Fault cause: %1, supplementary information: %2, preliminary component number: %3

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** Unable to carry out a quick commissioning. The existing actual topology does not fulfill the requirements.

Alarm value (0x124, interpret hexadecimal): cccccbbaa hex: cccc = preliminary component number, bb = supplementary information, aa = fault cause

```
aa = 01 hex = 1 dec:
On one component illegal connections were detected.
- bb = 01 hex = 1 dec: For a Motor Module, more than one motor with DRIVE-CLIQ was detected.
- bb = 02 hex = 2 dec: For a motor with DRIVE-CLIQ, the DRIVE-CLIQ cable is not connected to a Motor Module.
```

```
aa = 02 hex = 2 dec:
The topology contains too many components of a particular type.
- bb = 01 hex = 1 dec: There is more than one master Control Unit.
- bb = 02 hex = 2 dec: There is more than 1 infeed (8 for a parallel circuit configuration).
- bb = 03 hex = 3 dec: There are more than 10 Motor Modules (8 for a parallel circuit configuration).
- bb = 04 hex = 4 dec: There are more than 9 encoders.
- bb = 05 hex = 5 dec: There are more than 8 Terminal Modules.
- bb = 07 hex = 7 dec: Unknown component type
- bb = 08 hex = 8 dec: There are more than 6 drive slaves.
- bb = 09 hex = 9 dec: Connection of a drive slave not permitted.
- bb = 0a hex = 10 dec: There is no drive master.
- bb = 0b hex = 11 dec: There is more than one motor with DRIVE-CLIQ for a parallel circuit.
- bb = 0c hex = 12 dec: Different power units are being used in a parallel connection.
- cccc: Not used.
```

```
aa = 03 hex = 3 dec:
More than 16 components are connected at a DRIVE-CLIQ socket of the Control Unit.
- bb = 0, 1, 2, 3 means e.g. detected at the DRIVE-CLIQ socket X100, X101, X102, X103.
- cccc: Not used.
```

```
aa = 04 hex = 4 dec:
The number of components connected one after the other is greater than 125.
- bb: Not used.
- cccc = preliminary component number of the first component and component that resulted in the fault.
```

```
aa = 05 hex = 5 dec:
The component is not permissible for SERVO.
- bb = 01 hex = 1 dec: SINAMICS G available.
- bb = 02 hex = 2 dec: Chassis available.
- cccc = preliminary component number of the first component and component that resulted in the fault.
```

```
aa = 06 hex = 6 dec:
On one component illegal EEPROM data was detected. These must be corrected before the system continues to boot.
- bb = 01 hex = 1 dec: The Order No. [MLFB] of the power unit that was replaced includes a space retainer. The space retainer (*) must be replaced by a correct character.
```

```
aa = 07 hex = 7 dec:
The actual topology contains an illegal combination of components.
- bb = 01 hex = 1 dec: Active Line Module (ALM) and Basic Line Module (BLM).
- bb = 02 hex = 2 dec: Active Line Module (ALM) and Smart Line Module (SLM).
- bb = 03 hex = 3 dec: SIMOTION control (e.g. SIMOTION D445) and SINUMERIK component (e.g. NX15).
- bb = 04 hex = 4 dec: SINUMERIK control (e.g. SINUMERIK 730.net) and SIMOTION component (e.g. CX32).
- cccc: Not used.
```

**Note:** Connection type and connection number are described in F01375. See also: p0097 (Select drive object type), r0098 (Actual device topology), p0099 (Device target topology)

**Remedy:**
- adapt the output topology to the permissible requirements.
- carry out commissioning using the commissioning software.
- for motors with DRIVE-CLIQ, connect the power and DRIVE-CLIQ cable to the same Motor Module (Single Motor Module: DRIVE-CLIQ at X202, Double Motor Module: DRIVE-CLIQ from motor 1 (X1) to X202, from motor 2 (X2) to X203).
Faults and alarms

List of faults and alarms

Re aa = 06 hex = 6 dec and bb = 01 hex = 1 dec:
Correct the order number when commissioning using the commissioning software.
See also: p0097 (Select drive object type), r0098 (Actual device topology), p0099 (Device target topology)

A01331  Topology: At least one component not assigned to a drive object
Message value:  Component number: %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  At least one component is not assigned to a drive object.
- when commissioning, a component was not able to be automatically assigned to a drive object.
- the parameters for the data sets are not correctly set.
Alarm value (r2124, interpret decimal):
Component number of the unassigned component.
Remedy:  This component is assigned to a drive object.
Check the parameters for the data sets.
Examples:
- power unit (p0121).
- motor (p0131, p0186).
- encoder interface (p0140, p0141, p0187 ... p0189).
- encoder (p0140, p0142, p0187 ... p0189).
- Terminal Module (p0151).
- option board (p0161).

F01340  Topology: Too many components on one line
Message value:  Component number or connection number: %1, fault cause: %2
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit.
Fault value (r0949, interpret hexadecimal):
xyy hex: x = fault cause, yy = component number or connection number.
1yy:
The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all read transfers.
2yy:
The communications clock cycle of the DRIVE-CLiQ connection on the Control Unit is not sufficient for all write transfers.
3yy:
Cyclic communication is fully utilized.
4yy:
The DRIVE-CLiQ cycle starts before the earliest end of the application. An additional dead time must be added to the control. Sign-of-life errors can be expected.
The conditions of operation with a current controller sampling time of 31.25 µs have not been maintained.
5yy:
Internal buffer overflow for net data of a DRIVE-CLiQ connection.
6yy:
Internal buffer overflow for receive data of a DRIVE-CLiQ connection.
7yy:
Internal buffer overflow for send data of a DRIVE-CLiQ connection.
8yy:
The component clock cycles cannot be combined with one another.
900:
The lowest common multiple of the clock cycles in the system is too high to be determined.
901:
The lowest common multiple of the clock cycles in the system cannot be generated with the hardware.
Faults and alarms

List of faults and alarms

Remedy:
- check the DRIVE-CLiQ connection.
- Reduce the number of components on the DRIVE-CLiQ line involved and distribute these to other DRIVE-CLiQ sockets of the Control Unit. This means that communication is uniformly distributed over several lines.
Re fault value = 1yy - 4yy in addition:
- increase the sampling times (p0112, p0115, p4099). If necessary, for DCC or FBLOCKS, change the assignment of the run-time group (p21000, p20000) so that the sampling time (r21001, r20001) is increased.
- if necessary, reduce the number of cyclically calculated blocks (DCC) and/or function blocks (FBLOCKS).
- reduce the function modules (r0108).
- establish the conditions for operation with a current controller sampling time of 31.25 µs (at the DRIVE-CLiQ line, only operate Motor Modules and Sensor Modules with this sampling time and only use a permitted Sensor Module (e.g. SMC20, this means a 3 at the last position of the order number)).
- For an NX, the corresponding Sensor Module for a possibly existing second measuring system should be connected to a free DRIVE-CLiQ socket of the NX.
Re fault value = 8yy in addition:
- check the clock cycles settings (p0112, p0115, p4099). Clock cycles on a DRIVE-CLiQ line must be perfect integer multiples of one another. As clock cycle on a line, all clock cycles of all drive objects in the previously mentioned parameters apply, which have components on the line involved.
Re fault value = 9yy in addition:
- check the clock cycles settings (p0112, p0115, p4099). The lower the numerical value difference between two clock cycles, the higher the lowest common multiple. This behavior has a significantly stronger influence, the higher the numerical values of the clock cycles.

F01341 Topology: Maximum number of DRIVE-CLiQ components exceeded
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Too many DRIVE-CLiQ components were defined in the actual topology.
Note: Pulse enable is withdrawn and prevented.
Remedy:
- check the DRIVE-CLiQ connection.
- reduce the number components on the DRIVE-CLiQ line involved in order to maintain the maximum quantity structure.

F01354 Topology: Actual topology indicates an illegal component
Message value: Fault cause: %1, component number: %2
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The actual topology indicates at least one illegal component.
Fault value (r0949, interpret hexadecimal):
yyyx hex: yy = component number, xx = cause.
xx = 1: Component at this Control Unit not permissible.
xx = 2: Component in combination with another component not permissible.
Note: Pulse enable is prevented.
Remedy: Remove the illegal components and restart the system.

F01355 Topology: Actual topology changed
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The device target topology (p0099) does not correspond to the device actual topology (r0098). The fault only occurs if the topology was commissioned using the automatic internal device mechanism and not using the commissioning software.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: r0098 (Actual device topology), p0099 (Device target topology)
List of faults and alarms

Remedy: One of the following counter-measures can be selected if no faults have occurred in the topology detection itself:

- If commissioning is still not completed:
  - carry out a self-commissioning routine (starting from p0009 = 1).
  - set p0099 = r0098, set p0009 = 0; for existing Motor Modules, this results in servo drives being automatically generated (p0107).
  - generating servo drives: set p0097 to 1, set p0009 to 0.
  - generating vector drives: set p0097 to 2, set p0009 to 0.
  - generating vector drives with parallel circuit: set p0097 to 12, set p0009 to 0.

- In order to set configurations in p0108, before setting p0009 to 0, it is possible to first set p0009 to 2 and modify p0108. The index corresponds to the drive object (p0107).

- If commissioning has already been completed:
  - re-establish the original connections and re-connect power to the Control Unit.
  - restore the factory setting for the complete equipment (all of the drives) and allow automatic self-commissioning again.
  - change the device parameterization to match the connections (this is only possible using the commissioning software).

Notice: Topology changes that result in this fault being generated cannot be accepted by the automatic function in the device, but must be transferred using the commissioning software and parameter download. The automatic function in the device only allows constant topology to be used. Otherwise, when the topology is changed, all of the previous parameter settings are lost and replaced by the factory setting.

See also: r0098 (Actual device topology)

F01356 Topology: There is a defective DRIVE-CLiQ component

Message value:
Fault cause: %1, Component number: %2, Connection number: %3

Drive object:
All objects

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
The actual topology indicates at least one defective DRIVE-CLiQ component.
Fault value (r0949, interpret hexadecimal):
zzyyxx hex:
zz = connection number of the component at which the defective component is connected
yy = component number of the component at which the defective component is connected
xx = fault cause
xx = 1: Component at this Control Unit not permissible.
xx = 2: component with communication defect.

Note:
Pulse enable is withdrawn and prevented.

Remedy:
Replace the defective component and restart the system.

F01357 Topology: Two Control Units identified on the DRIVE-CLiQ line

Message value:
component number: %1, connection number: %2

Drive object:
All objects

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
In the actual topology, 2 Control Units are connected with one another through DRIVE-CLiQ. This is not permitted.
Fault value (r0949, interpret hexadecimal):
yyxx hex:
yy = connection number of the Control Unit at which the second Control Unit is connected
xx = component number of the Control Unit at which the second Control Unit is connected

Note:
Pulse enable is withdrawn and prevented.

Remedy:
- remove the second Control Unit and restart the system.
- for the component DRIVE-CLiQ extension, interchange the hybrid cable (IN/OUT).
### Faults and alarms

#### List of faults and alarms

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<tr>
<td>F01360</td>
<td><strong>Topology: Actual topology not permissible</strong></td>
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</tbody>
</table>

#### A01358
- **Message value:** CU connection number: %1, component number: %2, connection number: %3
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** At least one line with distributed drives is not terminated. The last participant on the line must be terminated with a line termination connector. This therefore ensures the degree of protection of the distributed drives.
- **Fault value (r0949, interpret hexadecimal):**
  - zzyyxx hex:
    - zz = connection number of the distributed drive where there is no terminating connector
    - yy = component number
    - xx = CU connection number
- **Remedy:** Install the line terminating connector for the last distributed drive.

#### F01360
- **Message value:** Fault cause: %1, preliminary component number: %2
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** The detected actual topology is not permissible.
  - Fault value (r0949, interpret hexadecimal):
    - ccccbbaa hex: cccc = preliminary component number, aa = fault cause
    - aa = 01 hex = 1 dec: Too many components were detected at the Control Unit. A maximum of 199 components is permissible.
    - aa = 02 hex = 2 dec: The component type of a component is not known.
    - aa = 03 hex = 3 dec: It is illegal to combine ALM and BLM.
      - aa = 04 hex = 4 dec: It is illegal to combine ALM and SLM.
      - aa = 05 hex = 5 dec: It is illegal to combine BLM and SLM.
      - aa = 06 hex = 6 dec: A CX32 was not directly connected to a permitted Control Unit.
      - aa = 07 hex = 7 dec: An NX10 or NX15 was not directly connected to a permitted Control Unit.
      - aa = 08 hex = 8 dec: A component was connected to a Control Unit that is not permitted for this purpose.
      - aa = 09 hex = 9 dec: A component was connected to a Control Unit with out-of-date firmware.
      - aa = 0A hex = 10 dec: Too many components of a particular type detected.
      - aa = 0B hex = 11 dec: Too many components of a particular type detected on a single line.
- **Note:** The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
- **Remedy:**
  - Re fault cause = 1:
    - Change the configuration. Connect less than 199 components to the Control Unit.
  - Re fault cause = 2:
    - Remove the component with unknown component type.
  - Re fault cause = 3, 4, 5:
    - Establish a valid combination.
  - Re fault cause = 6, 7:
    - Connect the expansion module directly to a permitted Control Unit.
  - Re fault cause = 8:
    - Remove component or use a permissible component.
  - Re fault cause = 9:
    - Upgrade the firmware of the Control Unit to a later version.
List of faults and alarms

Re fault cause = 10, 11:
Reduce the number of components.

A01361 Topology: Actual topology contains SINUMERIK and SIMOTION components

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
The detected actual topology contains SINUMERIK and SIMOTION components.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
Alarm value (r2124, interpret hexadecimal):
ddcobbaa hex: cc = fault cause, bb = component class of the actual topology, aa = component number of the component
cc = 01 hex = 1 dec:
An NX10 or NX15 was connected to a SIMOTION control.
cc = 02 hex = 2 dec:
A CX32 was connected to a SINUMERIK control.
Remedy:
Re alarm value = 1:
Replace all NX10 or NX15 by a CX32.
Re alarm value = 2:
Replace all CX32 by an NX10 or NX15.

A01362 Topology: Topology rule(s) broken

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
At least one topology rule for the SINAMICS S120 Combi has been broken.
In the event of a fault, the ramping up of the drive system is aborted and closed-loop drive control is not enabled.
The alarm value indicates which rule has been violated.
1: The S120 Combi may only be wired via DRIVE-CLiQ socket X200 to X100 on the NCU.
2: Only one Single Motor Module (SMM) or one Double Motor Module (DMM) may be connected via X200 to the DRIVE-CLiQ socket X101 on the NCU.
3: Only one Terminal Module 54F (TM54F) or one DRIVE-CLiQ Hub Module (hub) may be connected via X500 to the DRIVE-CLiQ socket X102 on the NCU.
4: Only Sensor Modules may be connected to DRIVE-CLiQ sockets X201 up to X203 (3-axis) or X204 (4-axis) on the S120 Combi.
5: Only one Sensor Module, type SMC20 or SME20 may be connected to DRIVE-CLiQ socket X205 (X204 is not available for 3-axis).
6: If a Single Motor Module is being used as the first expansion axis, only one more Single Motor Module may be connected (via X200 to X201 on the first Single Motor Module).
7: Only Sensor Modules may be connected to the corresponding DRIVE-CLiQ socket X202 on any Single Motor Modules which may be present.
8: For a second Single Motor Module or for a Double Motor Module, it is not permissible to connect anything at X201.
9: If a Double Motor Module is used as an expansion axis, only Sensor Modules may be connected to X202 and X203.
10: If a Terminal Module 54F (TM54F) is configured, only one DRIVE-CLiQ Hub Module (DMC20, DME20) may be connected to X501 of the TM54F module via DRIVE-CLiQ socket X500.
11: On the DRIVE-CLiQ Hub Module, only Sensor Modules Cabinet (SMC) and Sensor Modules External (SME) may be connected to X501 through X505.
12: Only certain Motor Modules may be used for expansion axes.
13: For an S120 Combi with 3 axes, nothing must be connected at the DRIVE-CLiQ Hub Module at X503.
Remedy:
Evaluate the fault value and ensure compliance with the corresponding topology rule(s).
## F01375  Topology: Actual topology, duplicate connection between two components

**Message value:** Preliminary component number: %1, component class: %2, connection number: %3

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** When detecting the actual topology, a ring-type connection was detected.

Fault value (r0949, interpret hexadecimal):

```
ccbbaaaa hex:
cc = connection number
bb = component class
aaaa = preliminary component number of a component included in the ring
```

Component class:
1: Control Unit.
2: Motor Module.
3: Line Module.
4: Sensor Module (SM).
5: Voltage Sensing Module (VSM).
6: Terminal Module (TM).
7: DRIVE-CLiQ Hub Module.
8: Controller Extension 32 (CX32, NX10, NX15).
9: Filter Module
49: DRIVE-CLiQ components (non-listed components).
50: Option Slot (e.g. Terminal Board 30).
60: Encoder (e.g. EnDat).
70: Motor with DRIVE-CLiQ.

Component type:
Precise designation within a component class (e.g. "SMC20").

Connection number:
Consecutive numbers, starting from zero, of the appropriate connection or slot (e.g. DRIVE-CLiQ connection X100 on the Control Unit has the connection number 0).

**Remedy:** Output the fault value and remove the specified connection.

**Note:**
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

## F01380  Topology: Actual topology, defective EEPROM

**Message value:** Preliminary component number: %1

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** POWER ON

**Cause:** When detecting the actual topology, a component with a defective EEPROM was detected.

Fault value (r0949, interpret hexadecimal):

```
bbbbaaaa hex:
aaaa = preliminary component number of the defective components
```

**Remedy:** Output the fault value and remove the defected component.

## A01381  Topology: Comparison power unit shifted

**Message value:** Component number: %1, component class: %2, component number: %3, connection number: %4

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The topology comparison has detected a power unit in the actual topology that has been shifted with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

```
ddccbbaa hex:
dd = connection number
cc = component number
bb = component class
aa = component number of the component shifted in the target topology
```
List of faults and alarms

Note:
The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01382 Topology: Comparison Sensor Module shifted
Message value: Component number: %1, component class: %2, component number: %3, connection number: %4
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a Sensor Module in the actual topology that has been shifted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
  dd = connection number
  cc = component number
  bb = component class
  aa = component number of the component shifted in the target topology
Note:
The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01383 Topology: Comparison Terminal Module shifted
Message value: Component number: %1, component class: %2, component number: %3, connection number: %4
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a Terminal Module in the actual topology that has been shifted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
  dd = connection number
  cc = component number
  bb = component class
  aa = component number of the component shifted in the target topology
Note:
The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).
Faults and alarms

List of faults and alarms

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01384 Topology: Comparison DRIVE-CLiQ Hub Module shifted
Message value: Component number: %1, component class: %2, component number: %3, connection number: %4
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a DRIVE-CLiQ Hub Module in the actual topology that has been shifted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbaa hex:
dd = connection number
cc = component number
bb = component class
aa = component number of the component shifted in the target topology
Note: The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
Remedy: Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).
Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01385 Topology: Comparison CX32 shifted
Message value: Component number: %1, component class: %2, component number: %3, connection number: %4
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a controller extension 32 (CX32) in the actual topology that has been shifted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbaa hex:
dd = connection number
cc = component number
bb = component class
aa = component number of the component shifted in the target topology
Note: The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.
Remedy: Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).
Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
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<th>Drive object</th>
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<th>Cause</th>
<th>Remedy</th>
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<tr>
<td>A01386</td>
<td>Topology: Comparison DRIVE-CLiQ component shifted</td>
<td>Component number: %1, component class: %2, component number: %3, connection number: %4</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The topology comparison has detected a DRIVE-CLiQ component in the actual topology that has been shifted with respect to the target topology. Alarm value (r2124, interpret hexadecimal): ddccbbaa hex: dd = connection number cc = component number bb = component class aa = component number of the component shifted in the target topology. Note: The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.</td>
<td></td>
</tr>
<tr>
<td>A01387</td>
<td>Topology: Comparison option slot component shifted</td>
<td>Component number: %1, component class: %2, component number: %3, connection number: %4</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The topology comparison has detected a option slot component in the actual topology that has been shifted with respect to the target topology. Alarm value (r2124, interpret hexadecimal): ddccbbaa hex: dd = connection number cc = component number bb = component class aa = component number of the component shifted in the target topology. Note: The connection in the actual topology where the shifted component was detected is described in dd, cc and bb. Component class and connection number are described in F01375. The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.</td>
<td></td>
</tr>
<tr>
<td>A01388</td>
<td>Topology: Comparison EnDat encoder shifted</td>
<td>Component number: %1, component class: %2, component number: %3, connection number: %4</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The topology comparison has detected an EnDat encoder in the actual topology that has been shifted with respect to the target topology.</td>
<td>Adapting the topologies: - undo the change to the actual topology by changing over the DRIVE-CLiQ cables. - commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project. - automatically remove the topology error (p9904). Note: Under “Topology --&gt; Topology view” the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number
cc = component number
bb = component class
aa = component number of the component shifted in the target topology

Note:
The connection in the actual topology where the shifted component was detected is described in dd, cc and bb.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:

Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01389  Topology: Comparison motor with DRIVE-CLiQ shifted

Message value: Component number: %1, component class: %2, component number: %3, connection number: %4

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has detected a motor with DRIVE-CLiQ in the actual topology that has been shifted with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:
dd = connection number
cc = component number
bb = component class
aa = component number of the component shifted in the target topology

Note:
The connection in the actual topology where the shifted component was detected is described in dd, cc and bb.
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:

Adapting the topologies:
- undo the change to the actual topology by changing over the DRIVE-CLiQ cables.
- commissioning software: Go online, upload the drive unit, adapt the topology offline and download the modified project.
- automatically remove the topology error (p9904).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01416  Topology: Comparison additional component in actual topology

Message value: Component number: %1, Component class: %2, Connection number: %3

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The topology comparison has found a component in the actual topology which is not specified in the target topology.
The alarm value includes the component number and connection number of the component with which the additional component is connected.
Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:
cc = connection number
bb = component class of the additional component
aa = component number

Note:
- component class and connection number are described in F01375.
- components that are connected to this additional component are not operational.
### A01420 Topology: Comparison a component is different

**Message value:** Component number: %1, component class target: %2, component class actual: %3, fault cause: %4

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
The topology comparison has detected differences in the actual and target topologies in relation to one component. There are differences in the electronic rating plate.

**Alarm value (r2124, interpret hexadecimal):**
ddccbaaa hex: aa = component number of the component, bb = component class of the target topology, cc = component class of the actual topology, dd = fault cause

dd = 01 hex = 1 dec:
- Different component type.
- Different Order No.
- Different manufacturer.

**Remedy:**
- check the component soft-wired connections against the hardware configuration of the drive unit in the commissioning software and correct differences.
- parameterize the topology comparison of all components (p9906).
- parameterize the topology comparison of one components (p9907, p9908).

### A01421 Topology: Comparison different components

**Message value:** Component number: %1, component class target: %2, component class actual: %3, fault cause: %4

**Drive object:** B_INF, TM150, VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
The topology comparison has detected differences in the actual and target topologies in relation to one component. The component class, the component type or the number of connections differ.

**Alarm value (r2124, interpret hexadecimal):**
ddccbaaa hex: aa = component number of the component, bb = component class of the target topology, cc = component class of the actual topology, dd = fault cause

dd = 01 hex = 1 dec:
- Different component class.
- Different Order No.

**Remedy:**
- Adapting the topologies:
- download the target topology that matches the actual topology (commissioning software).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
Faults and alarms

List of faults and alarms

Note:
Component class, component type and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Check the component soft-wired connections against the hardware configuration of the drive unit in the commissioning software and correct differences.

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01425

Topology: Comparison serial number of a component is different

Message value: Component number: %1, Component class: %2, Differences: %3
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component.
The serial number is different.
Alarm value (r2124, interpret hexadecimal):
   ddcbbaa hex:
   cc = number of differences
   bb = component class
   aa = component number of the component
Note:
The component class is described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Adapting the topologies:
- change over the actual topology to match the target topology.
- download the target topology that matches the actual topology (commissioning software).
Re byte cc:
   cc = 1 --> can be acknowledged using p9904 or p9905.
   cc > 1 --> can be acknowledged using p9905 and can be de-activated using p9906 or p9907/p9908.
Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
See also: p9904 (Topology comparison, acknowledge differences), p9905 (Device specialization), p9906 (Topology comparison, comparison stage of all components), p9907 (Topology comparison, comparison stage of the component number), p9908 (Topology comparison, comparison stage of a component)

A01428

Topology: Comparison connection of a component is different

Message value: Component number: %1, Component class: %2, Connection number1: %3, Connection number2: %4
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected differences in the actual and target topologies in relation to one component.
A component was connected to another connection.
The different connections of a component are described in the alarm value:
Alarm value (r2124, interpret hexadecimal):
   ddcbbaa hex:
   dd = connection number of the target topology
   cc = connection number of the actual topology
   bb = component class
   aa = component number
Note:
Component class and connection number are described in F01375.
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.

Remedy:
Adapting the topologies:
- change over the actual topology to match the target topology.
- download the target topology that matches the actual topology (commissioning software).
- automatically remove the topology error (p9904).
### Note:
Under "Topology -> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).
See also: p9904 (Topology comparison, acknowledge differences)

### A01429 - Topology: Comparison connection is different for more than one component

**Message value:** Component number: %1, Component class: %2, Connection number1: %3, Connection number2: %4  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** A topology comparison has found differences between the actual and target topology for several components. A component was connected to another connection.  
The different connections of a component are described in the alarm value:  
Alarm value (r2124, interpret hexadecimal):  
ddccbbaa hex:  
  
<table>
<thead>
<tr>
<th>dd</th>
<th>cc</th>
<th>bb</th>
<th>aa</th>
</tr>
</thead>
<tbody>
<tr>
<td>connection number of the target topology</td>
<td>connection number of the actual topology</td>
<td>component class</td>
<td>component number</td>
</tr>
</tbody>
</table>
  
**Note:**  
Component class and connection number are described in F01375.  
The drive system is no longer booted. In this state, the drive control (closed-loop) cannot be enabled.  

**Remedy:**  
Adapting the topologies:  
- change over the actual topology to match the target topology.  
- download the target topology that matches the actual topology (commissioning software).  
**Note:**  
In the software, a Double Motor Module behaves just like two separate DRIVE-CLiQ nodes. If a Double Motor Module is re-inserted, this can result in several differences in the actual topology.  
Under "Topology -> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

### F01451 - Topology: Target topology is invalid

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** An error was detected in the target topology.  
The target topology is invalid.  
Fault value (r0949, interpret hexadecimal):  
ccccbbbaa hex:  
  
<table>
<thead>
<tr>
<th>cccc</th>
<th>bb</th>
<th>aa</th>
</tr>
</thead>
<tbody>
<tr>
<td>index error</td>
<td>component number</td>
<td>fault cause</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>1B</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>1C</th>
<th>28</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>1D</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>1E</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>1F</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
<table>
<thead>
<tr>
<th>aa</th>
<th>20</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>hex</td>
<td>dec</td>
<td>dec</td>
</tr>
</tbody>
</table>
    
**Remedy:**  
Reload the target topology using the commissioning software.

### F01470 - Topology: Target topology ring-type connection detected

**Message value:** Component number: %1, Component class: %2, Connection number: %3  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** A ring-type connection was detected when writing to the target topology.  
Fault value (r0949, interpret hexadecimal):  
ddccbbaa hex:  
  
<table>
<thead>
<tr>
<th>dd</th>
<th>cc</th>
<th>bb</th>
<th>aa</th>
</tr>
</thead>
<tbody>
<tr>
<td>connection number</td>
<td>connection class</td>
<td>component number of a component included in the ring</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Note:
Component class and connection number are described in F01375.

Remedy:
Read out the fault value and remove one of the specified connections.
Then download the target topology again using the commissioning software.
Note:
Under "Topology → Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01475  Topology: Target topology duplicate connection between two components
Message value:
Component number: %1, Component class: %2, Connection number1: %3, Connection number2: %4
Drive object:
All objects
Reaction:
NONE
Acknowledge:
IMMEDIATELY
Cause:
When writing the target topology, a duplicate connection between two components was detected.
Fault value (r0949, interpret hexadecimal):
ddccbbaa hex:
dd = connection number 2 of the duplicate connection
cc = connection number 1 of the duplicate connection
bb = component class
aa = component number of one of the components connected twice
Note:
Component class and connection number are described in F01375.
Remedy:
Read out the fault value and remove one of the two specified connections.
Then download the target topology again using the commissioning software.
Note:
Under "Topology → Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01481  Topology: Comparison power unit missing in the actual topology
Message value:
Component number: %1
Drive object:
All objects
Reaction:
NONE
Acknowledge:
NONE
Cause:
The topology comparison has detected a power unit in the target topology that is not available in the actual topology.
Alarm value (r2124, interpret decimal):
Component number of the additional target components.
Remedy:
- delete the drive belonging to the power unit in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check the 24 V supply voltage.
- check that the power unit is working properly.
Note:
Under "Topology → Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01482  Topology: Comparison Sensor Module missing in the actual topology
Message value:
Component number: %1
Drive object:
All objects
Reaction:
NONE
Acknowledge:
NONE
Cause:
The topology comparison has detected a Sensor Module in the target topology that is not available in the actual topology.
Alarm value (r2124, interpret decimal):
Component number of the additional target components.
Remedy:
- re-configure the drive belonging to the Sensor Module in the commissioning software project (encoder configuration) and download the new configuration to the drive unit.
- delete the drive belonging to the Sensor Module in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check the 24 V supply voltage.
- check that the Sensor Module is working properly.

Note:
Under “Topology --> Topology view” the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

**A01483 Topology: Comparison Terminal Module missing in the actual topology**

- **Message value:** Component number: %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The topology comparison has detected a Terminal Module in the target topology that is not available in the actual topology.
  - Alarm value (r2124, interpret decimal):
  - Component number of the additional target components.
- **Remedy:**
  - delete the Terminal Module in the commissioning software project and download the new configuration to the drive unit.
  - check that the actual topology matches the target topology and if required, change over.
  - check DRIVE-CLiQ cables for interruption and contact problems.
  - check the 24 V supply voltage.
  - check that the Terminal Module is working properly.

Note:
Under “Topology --> Topology view” the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

**A01484 Topology: Comparison DRIVE-CLiQ Hub Module missing in the actual topology**

- **Message value:** Component number: %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The topology comparison has detected a DRIVE-CLiQ Hub Module in the target topology that does not exist in the actual topology.
  - Alarm value (r2124, interpret decimal):
  - Component number of the additional target components.
- **Remedy:**
  - delete the DRIVE-CLiQ Hub Module in the commissioning software project and download the new configuration to the drive unit.
  - check that the actual topology matches the target topology and if required, change over.
  - check DRIVE-CLiQ cables for interruption and contact problems.
  - check the 24 V supply voltage.
  - test the DRIVE-CLiQ Hub Module to ensure that it functions properly.

Note:
Under “Topology --> Topology view” the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

**A01485 Topology: Comparison CX32 missing in the actual topology**

- **Message value:** Component number: %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The topology comparison has detected a controller extension 32 (CX32) in the target topology that is not available in the actual topology.
  - Alarm value (r2124, interpret decimal):
  - Component number of the additional target components.
- **Remedy:**
  - delete the CX32 / NX in the commissioning software project and download the new configuration to the drive unit.
  - check that the actual topology matches the target topology and if required, change over.
  - check DRIVE-CLiQ cables for interruption and contact problems.
  - check the 24 V supply voltage.
- check that CX32/NX functions correctly.

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

<table>
<thead>
<tr>
<th>A01486</th>
<th>Topology: Comparison DRIVE-CLiQ components missing in the actual topology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The topology comparison has detected a DRIVE-CLiQ component in the target topology that is not available in the actual topology.
Alarm value (r2124, interpret decimal):
Component number of the additional target components. |
| Remedy: | - delete the drive belonging to this component in the commissioning software project and download the new configuration to the drive unit.
- re-configure the drive belonging to this component in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check the 24 V supply voltage.
- check that the component is working properly. |
| Note: | Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison). |

<table>
<thead>
<tr>
<th>A01487</th>
<th>Topology: Comparison option slot components missing in the actual topology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The topology comparison has detected an option slot module in the target topology that is not available in the actual topology.
Alarm value (r2124, interpret decimal):
Component number of the additional target components. |
| Remedy: | - delete the option board in the commissioning software project and download the new configuration to the drive unit.
- re-configure the drive unit in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over.
- check that the option board is functioning correctly |
| Note: | Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison). |

<table>
<thead>
<tr>
<th>A01488</th>
<th>Topology: Comparison EnDat encoder missing in the actual topology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The topology comparison has detected an EnDat encoder in the target topology that is not available in the actual topology.
Alarm value (r2124, interpret decimal):
Component number of the additional target components. |
| Remedy: | - re-configure the drive belonging to the encoder in the commissioning software project (encoder configuration) and download the new configuration to the drive unit.
- delete the drive belonging to the encoder in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over. |
Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01489  Topology: Comparison motor with DRIVE-CLiQ missing in the actual topology
Message value:  Component number: %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  The topology comparison has detected a motor with DRIVE-CLiQ in the target topology that is not available in the actual topology.
Alarm value (%2124, interpret decimal): Component number of the additional target components.
Remedy:  - re-configure the drive belonging to this motor in the commissioning software project and download the new configuration to the drive unit.
- check that the actual topology matches the target topology and if required, change over.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the motor is working properly.
Note:  Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

F01505 (A)  BICO: Interconnection cannot be established
Message value:  Parameter: %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A PROFIdrive telegram has been set (p0922).
An interconnection contained in the telegram was not able to be established.
Fault value (r0949, interpret decimal): Parameter receiver that should be changed.
Remedy:  Establish another interconnection.
Reaction upon A:  NONE
Acknowl. upon A:  NONE

F01506 (A)  BICO: No standard telegram
Message value:  Parameter: %1
Drive object:  B_INF, TM150, TM31, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The standard telegram in p0922 is not maintained and therefore p0922 is set to 999.
Fault value (r0949, interpret decimal): BICO parameter for which the write attempt was unsuccessful.
Remedy:  Again set the required standard telegram (p0922).
Reaction upon A:  NONE
Acknowl. upon A:  NONE

A01507 (F, N)  BICO: Interconnections to inactive objects present
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  There are BICO interconnections to an inactive/inoperable drive object.
The B/I parameters involved are listed in r9498.
The associated BO/CO parameters are listed in r9499.
Faults and alarms

List of faults and alarms

The list of the BICO interconnections to other drive objects is displayed in r9491 and r9492 of the de-activated drive object.

Note:
r9498 and r9499 are only written to, if p9495 is not set to 0.
Alarm value (r2124, interpret decimal):
Number of BICO interconnections found to inactive drive objects.

Remedy:
- set all open BICO interconnections centrally to the factory setting with p9495 = 2.
- make the non-operational drive object active/operational again (re-insert or activate components).

Reaction upon F: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (ENCODER, IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A01508 BICO: Interconnections to inactive objects exceeded

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
The maximum number of BICO interconnections (signal sinks) when de-activating a drive object was exceeded.
When de-activating a drive object, all BICO interconnections (signal sinks) are listed in the following parameters:
- r9498[0...29]: List of the BI/CI parameters involved.
- r9499[0...29]: List of the associated BO/CO parameters.

Remedy:
The alarm automatically disappears as soon as no BICO interconnection (value = 0) is entered in r9498[29] and r9499[29].
Notice:
When re-activating the drive object, all BICO interconnections should be checked and if required, re-established.

F01510 BICO: Signal source is not float type

Message value: Parameter: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause:
The requested connector output does not have the correct data type. This interconnection is not established.
Fault value (r0949, interpret decimal):
Parameter number to which an interconnection should be made (connector output).

Remedy:
Interconnect this connector input with a connector output having a float data type.

F01511 (A) BICO: Interconnection with different scalings

Message value: Parameter: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause:
The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.
- the BICO output has different normalized units than the BICO input.
- message only for interconnections within a drive object.
Example:
The BICO output has, as normalized unit, voltage and the BICO input has current.
This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.
p2002: contains the reference value for current
p2001: contains the reference value for voltage
Fault value (r0949, interpret decimal):
Parameter number of the BICO input (signal sink).

Remedy:
Not necessary.
Reaction upon A: NONE
Acknowl. upon A: NONE
### F01512  BICO: No scaling available

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** Infeed: OFF2 (OFF1)  
Vector: OFF2  
**Acknowledge:** POWER ON  
**Cause:**  
An attempt was made to determine a conversion factor for a scaling that does not exist.  
Fault value (r0949, interpret decimal): Unit (e.g. corresponding to SPEED) for which an attempt was made to determine a factor.  
**Remedy:** Apply scaling or check the transfer value.

### F01513 (A)  BICO: Interconnection cross DO with different scalings

**Message value:** Parameter: %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
The requested BICO interconnection was established. However, a conversion is made between the BICO output and BICO input using the reference values.  
An interconnection is made between different drive objects and the BICO output has different normalized units than the BICO input or the normalized units are the same but the reference values are different.  
Example 1:  
BICO output with voltage normalized unit, BICO input with current normalized unit, BICO output and BICO input lie in different drive objects. This means that the factor p2002/p2001 is calculated between the BICO output and the BICO input.  
p2002: contains the reference value for current  
p2001: contains the reference value for voltage  
Example 2:  
BICO output with voltage normalized unit in drive object 1 (DO1), BICO input with voltage normalized unit in drive object 2 (DO2). The reference values for voltage (p2001) of the two drive objects have different values. This means that the factor p2001(DO1)/p2001(DO2) is calculated between the BICO output and the BICO input.  
p2001: contains the reference value for voltage, drive objects 1, 2  
**Fault value (r0949, interpret decimal):** Parameter number of the BICO input (signal sink).  
**Remedy:** Not necessary.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### A01514 (F)  BICO: Error when writing during a reconnect

**Message value:** Parameter: %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
During a reconnect operation (e.g. while booting or downloading - but can also occur in normal operation) a parameter was not able to be written to.  
Example:  
When writing to BICO input with double word format (DWORD), in the second index, the memory areas overlap (e.g. p8861). The parameter is then reset to the factory setting.  
**Alarm value (r2124, interpret decimal):** Parameter number of the BICO input (signal sink).  
**Remedy:** Not necessary.  
**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY
F01515 (A)  
BICO: Writing to parameter not permitted as the master control is active

Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  When changing the number of CDS or when copying from CDS, the master control is active.
Remedy:  If required, return the master control and repeat the operation.
Acknowl. upon A:  NONE

A01590 (F)  
Drive: Motor maintenance interval expired

Message value:  Fault cause: %1 bin
Drive object:  B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The selected service/maintenance interval for this motor was reached.
Alarm value (r2124, interpret decimal):
Motor data set number.
See also: p0650 (Actual motor operating hours), p0651 (Motor operating hours maintenance interval)
Remedy:  carry out service/maintenance and reset the service/maintenance interval (p0651).
Reaction upon F:  NONE
Acknowl. upon F:  IMMEDIATELY

F01600  
SI CU: STOP A initiated

Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a fault and initiated a STOP A (pulse suppression via the safety shutdown path of the Control Unit).
- forced checking procedure of the safety shutdown path of the Control Unit unsuccessful.
- subsequent response to fault F01611 (defect in a monitoring channel).
Fault value (r0949, interpret decimal):
0: Stop request from the Motor Module.
1005: Pulses suppressed although STO not selected and there is no internal STOP A present.
1010: Pulses enabled although STO is selected or an internal STOP A is present.
1015: Feedback of the safe pulse suppression for Motor Modules connected in parallel are different.
9999: Subsequent response to fault F01611.
Remedy:  - select Safe Torque Off and de-select again.
- replace the Motor Module involved.
For fault value = 9999:
- carry out diagnostics for fault F01611.
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

F01611  
SI CU: Defect in a monitoring channel

Message value:  %1
Drive object:  VECTOR_G
Reaction:  NONE (OFF1, OFF2, OFF3)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a fault in the crosswise data comparison between the CU and Motor Module (MM) and initiated a STOP F.
As a result of this fault, after the parameterized transition has expired (p9658), fault F01600 (SI CU: STOP A initiated) is output.
Fault value (r0949, interpret decimal):
0: Stop request from the Motor Module.
1 ... 999:
Number of the cross-compared data that resulted in this fault. This number is also displayed in r9795.
1: SI monitoring clock cycle (r9780, p9880).
2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.
3: SI SGE changeover tolerance time (p9650, p9850).
4: SI transition period STOP F to STOP A (p9658, p9858).
5: SI enable Safe Brake Control (p9602, p9802).
6: SI Motion enable, safety-relevant functions (p9501, internal value).
7: SI pulse suppression delay time for Safe Stop 1 (p9652, p9852).
8: SI PROFIsafe address (p9610, p9810).
9: SI debounce time for STO/SBC/SS1 (MM) (p9651, p9851).
10: SI delay time for pulse suppression for ESR (p9697, p9897).
11: SI Safe Brake Adapter mode, BICO interconnection (p9621, p9821).
12: SI Safe Brake Adapter relay ON time (p9622[0], p9822[0]).
13: SI Safe Brake Adapter relay OFF time (p9622[1], p9822[1]).
14: SI PROFIsafe telegram selection (p9611, p9811).
1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:
- Too many switching operations have occurred at the EP terminal of the Motor Module.
- Via PROFIsafe/TS54F, STO was too frequently initiated (also as subsequent response).
- Safe pulse cancellation (r9723.9) was too frequently initiated (also as subsequent response).
1001, 1002: Initialization error, change timer / check timer.
1900: CRC error in the SAFETY sector.
1901: CRC error in the ITCM sector.
1902: Overloading in the ITCM sector has occurred in operation.
1950: Module temperature outside the permissible temperature range.
1951: Module temperature not plausible.
2000: Status of the STO selection on the Control Unit and Motor Module are different.
2001: Feedback signal for safe pulse suppression on the Control Unit and Motor Module are different.
2002: Status of the delay timer SS1 on the Control Unit and Motor Module are different (status of the timer in p9650/p9850).
2004: Status of the STO selection for modules connected in parallel are different.
2005: Feedback signal of the safe pulse suppression on the Control Unit and Motor Modules connected in parallel are different.
6000 ... 6999:
Error in the PROFI safe control.
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711.

Remedy:

Re fault value = 1 ... 5 and 7 ... 999:
- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 6:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 1000:
- check the EP terminal at the Motor Module (contact problems).
- PROFI safe: Remove contact problems/faults at the PROFINET master/PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).
Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
Re fault value = 1900, 1901, 1902:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Control Unit software.
- replace Control Unit.
Faults and alarms

List of faults and alarms

- check the tolerance time SGE changeover and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check the causes of the STO selection in r9772. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace the Motor Module involved.

Re fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01711.

Note:
CU: Control Unit
EP: Enable Pulses (pulse enable)
ESR: Extended Stop and Retract
MM: Motor Module
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

F01612 SI CU: STO inputs for power units connected in parallel different
Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive-integrated "Safety Integrated" function on the Control Unit (CU) has identified different states of the AND’ed STO inputs for power units connected in parallel and has initiated a STOP F.
As a result of this fault, after the parameterized transition has expired (p9658), fault F01600 (SI CU: STOP A initiated) is output.
Fault value (r0949, interpret binary):
Binary image of the digital inputs of the Control Unit that are used as signal source for the function "Safe Torque Off".
Remedy:
- check the tolerance time SGE changeover and if required, increase the value (p9650).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).

Note:
CU: Control Unit
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

N01620 (F, A) SI CU: Safe Torque Off active
Message value: 
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The "Safe Torque Off" (STO) function of the basic functions has been selected on the Control Unit (CU) using the input terminal and is active.
Note:
- This message does not result in a safety stop response.
- This message is not output when STO is selected using the Extended Functions.
Remedy:
Not necessary.

Note:
CU: Control Unit
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon A: NONE
Acknowl. upon A: NONE
### N01621 (F, A)
**SI CU: Safe Stop 1 active**

**Message value:** -
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** The "Safe Stop 1" (SS1) function has been selected on the Control Unit (CU) and is active.
- This message does not result in a safety stop response.

**Remedy:** Not necessary.
**Note:**
- CU: Control Unit
- SI: Safety Integrated
- SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

**Reaction upon F:** NONE (OFF3)
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

### F01625
**SI CU: Sign-of-life error in safety data**

**Message value:** %1
**Drive object:** VECTOR_G
**Reaction:** OFF2
**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected an error in the sign-of-life of the safety data between the CU and Motor Module (MM) and initiated a STOP A.
- there is either a DRIVE-CLiQ communication error or communication has failed.
- a time slice overflow of the safety software has occurred.
**Fault value (r0949, interpret decimal):**
Only for internal Siemens troubleshooting.

**Remedy:**
- select Safe Torque Off and de-select again.
- carry out a POWER ON (power off/on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- de-select all drive functions that are not absolutely necessary.
- reduce the number of drives.
- check the electrical cabinet design and cable routing for EMC compliance

**Note:**
- CU: Control Unit
- MM: Motor Module
- SI: Safety Integrated

### F01630
**SI CU: Brake control error**

**Message value:** %1
**Drive object:** VECTOR_G
**Reaction:** OFF2
**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The drive-integrated "Safety Integrated" function on the Control Unit (CU) has detected a brake control fault and initiated a STOP A.
**Fault value (r0949, interpret decimal):**
- Fault value = 10, 11:
  - "open holding brake" operation.
  - Parameter p1278 incorrectly set.
  - No brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
  - Ground fault in brake cable.
- Fault value = 20:
  -Fault in "brake open" state.
  - Short-circuit in brake winding.
Faults and alarms

List of faults and alarms

Re fault value = 30, 31:
Fault in "close holding brake" operation.
- No brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
- Short-circuit in brake winding.
For fault value = 40:
Fault in "brake closed" state.
For fault value = 50:
Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control).
For fault value = 80:
Safe Brake Adapter.
Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control).
For fault value = 90:
Brake released for service purposes (X4).
Note:
The following causes may apply to fault values:
- motor cable is not shielded correctly.
- defed in control circuit of the Motor Module.

Remedy:
- check parameter p1278 (for SBC, only p1278 = 0 is permissible).
- for a parallel connection, check the setting of the power unit data set to control the holding brake (p7015).
- select Safe Torque Off and de-select again.
- check the motor holding brake connection.
- check the function of the motor holding brake.
- check whether there is a DRIVE-CLIQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g., shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- replace the Motor Module involved.

Operation with Safe Brake Module or Safe Brake Adapter:
- check the Safe Brake Module or Safe Brake Adapter connection.
- Replace the Safe Brake Module or Safe Brake Adapter.
Note:
CU: Control Unit
SBC: Safe Brake Control
SI: Safety Integrated

F01649 SI CU: Internal software error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal error in the Safety Integrated software on the Control Unit has occurred.
Note: This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON (power off/on) for all components.
- re-commission the "Safety Integrated" function and carry out a POWER ON.
- Upgrade the firmware of the Control Unit to a later version.
- contact the Hotline.
- replace the Control Unit.
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
F01650  SI CU: Acceptance test required

Message value:  %1
Drive object:   All objects
Reaction:       OFF2
Acknowledge:    IMMEDIATELY (POWER ON)
Cause:          The drive-integrated "Safety Integrated" function on the Control Unit requires an acceptance test.

Note:           This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
130: Safety parameters for the Motor Module not available.

Note:           This fault value is always output when Safety Integrated is commissioned for the first time.
1000: Reference and actual checksum on the Control Unit are not identical (booting).
- as a result of the changed current controller sampling time (p0115[0]), the clock cycle time for the Safety Integrated
  Basic Functions (r9780) was adapted.
- at least one checksum-checked piece of data is defective.
- Safety parameters set offline and loaded into the Control Unit.
2000: Reference and actual checksum on the Control Unit are not identical (commissioning mode).
- reference checksum incorrectly entered into the Control Unit (p9799 not equal to r9798).
- when de-activating the safety functions, p9501 or p9503 were not deleted.
2001: Reference and actual checksum on the Motor Module are not identical (commissioning mode).
- reference checksum incorrectly entered into the Motor Module (p9899 not equal to r9898).
- when de-activating the safety functions, p9501 or p9503 are not deleted.
2002: Enable of safety-related functions between the Control Unit and Motor Module differ (p9601 not equal to
  p9801).
2003: Acceptance test is required as a safety parameter has been changed.
2004: An acceptance test is required because a project with enabled safety-functions has been downloaded.
2005: The Safety logbook has identified that a functional safety checksum has changed. An acceptance test is
  required.
2010: Safe Brake Control is enabled differently between the Control Unit and Motor Module (p9602 not equal to
  p9802).
2020: Error when saving the safety parameters for the Motor Module.
3003: Acceptance test is required as a hardware-related safety parameter has been changed.
3005: The Safety logbook has identified that a hardware-related safety checksum has changed. An acceptance test
  is required.
9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance
test.

Remedy:
For fault value = 130:
- carry out safety commissioning routine.
For fault value = 1000:
- check the Safety Integrated Basic Functions (r9780) and adapt the reference checksum (p9799).
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate
  settings).
For fault value = 2000:
- check the safety parameters in the Control Unit and adapt the reference checksum (p9799).
For fault value = 2001:
- check the safety parameters in the Motor Module and adapt the reference checksum (p9899).
For fault value = 2002:
- enable the safety-related functions in the Control Unit and check in the Motor Module (p9601 = p9801).
Re fault value = 2003, 2004, 2005:
- Carry out an acceptance test and generate an acceptance report.
The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided
in the following literature:
SINAMICS S120 Function Manual Safety Integrated
The fault with fault value 2005 can only be acknowledged when the "STO" function is de-selected.
For fault value = 2010:
- check enable of the safety-related brake control in the Control Unit and Motor Module (p9602 = p9802).
For fault value = 2020:
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
For fault value = 3003:
- carry out the function checks for the modified hardware and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:
SINAMICS S120 Function Manual Safety Integrated

For fault value = 3005:
- carry out the function checks for the modified hardware and generate an acceptance report.
The fault with fault value 3005 can only be acknowledged when the "STO" function is de-selected.

For fault value = 9999:
- carry out diagnostics for the other safety-related fault that is present.

Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off
See also: p9799 (SI reference checksum SI parameters (Control Unit)), p9899 (SI reference checksum SI parameters (Motor Module))

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**F01651 SI CU: Synchronization safety time slices unsuccessful**

<table>
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<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
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<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
</tbody>
</table>
| Cause:         | The "Safety Integrated" function requires a synchronization of the safety time slices between the Control Unit (CU) and Motor Module (MM) and between the Control Unit and the higher-level control. This synchronization routine was unsuccessful. Note:

- This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):
- 121:
  - with SINUMERIK Safety Integrated enabled, a drive-side warm restart was performed on the CU/NX.
  - with SINUMERIK Safety Integrated enabled, the function "restore factory setting" was selected on a drive object of the CU and a drive-side warm restart was initiated.
- 150:
  - fault in the synchronization to the PROFIBUS master.

All other values:
- only for internal Siemens troubleshooting.

See also: p9510 (SI Motion clock-cycle synchronous PROFIBUS master)

| Remedy: | For fault value = 121:
- carry out a common POWER ON/warm restart for the higher-level control and SINAMICS.
For fault value = 150:
- check the setting of p9510 (SI Motion clock-cycle synchronous PROFIBUS master) and if required, correct.

General:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
- upgrade the software of the higher-level control.

Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
See also: p9510 (SI Motion clock-cycle synchronous PROFIBUS master) |

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**F01652 SI CU: Illegal monitoring clock cycle**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
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<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>The monitoring clock cycle is not permissible.</td>
</tr>
</tbody>
</table>

One of the Safety Integrated monitoring clock cycles is not permissible.
- the monitoring clock cycle integrated in the drive cannot be maintained due to the communication conditions required in the system.
- the monitoring clock cycle for safe motion monitoring functions is not permissible (p9500).
- the actual value sensing clock cycle for safe motion monitoring functions is not permissible (p9511).
- The sampling time for the current controller (p0112, p0115[0]) cannot be supported.

Note:
This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):
- For motion monitoring functions that are not enabled (p9601.2 = p9801.2 = 0, p9501 = 0), the following applies:
  - Minimum setting for the monitoring clock cycle (in µs).
- For motion monitoring functions that are enabled (p9601.2 = p9801.2 = 1 and/or p9501 > 0), the following applies:
  - No matching monitoring clock cycle was able to be found.
  - The monitoring clock cycle is not an integer multiple of the actual value sensing clock cycle.
  - An error has occurred when transferring the actual value sensing clock cycle to the Motor Module (MM).
  - An error has occurred when transferring the actual value sensing clock cycle to the Sensor Module.
  - four times the current controller sampling time (p0115[0]) is greater than 1 ms when operating with a non-isochronous PROFIBUS.
  - four times the current controller sampling time (p0115[0]) is greater than the DP clock cycle when operating with an isochronous PROFIBUS.
  - The DP clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).
  - The monitoring clock cycle does not match the monitoring clock cycle of the TM54F.
  - The actual value sensing clock cycle (p9511) is less than four times the current controller sampling time (p0115[0]).
  - The actual value sensing clock cycle (p9511) is not an integer multiple of the sampling time of the current controller (p0115[0]).
  - The parameterized actual value sensing clock cycle cannot be set on this component.
  - If the motion monitoring functions have been parameterized as encoderless (p9506), the actual value sensing clock cycle (p9511) and the current controller clock cycle (p0115[0]) must be identical.

The following applies to SINAMICS S110:
- If the motion monitoring functions have been parameterized as encoderless (p9506), the actual value sensing clock cycle p9511 must be = 250 µs.
- The actual value sensing clock cycle (p9511) for safety with encoder (p9506 = 0) is less than 2 ms for this Control Unit (e.g. CU305).
- The actual value sensing clock cycle is not an integer multiple of the sampling time of the current controller (p0115[0]).
- For the S120M the monitoring clock cycle cannot be maintained as a result of the conditions required in the system.
- The current controller sampling time is set to zero (p0115[0]).

Remedy:
- Upgrade the firmware of the Control Unit to a later version.
- correct the monitoring clock cycle (p9500) and carry out POWER ON.
- For fault value = 101:
  - actual value sensing clock cycle corresponds to position control clock cycle/DP clock cycle (factory setting).
  - For motion monitoring functions integrated in the drive (p9601/p9801bit 2 = 1) the actual value sensing clock cycle can be directly parameterized in P9511/p9311.
  - set a separate actual value sensing clock cycle in p9511.
  - restrict operation to a maximum of two vector drives. For the standard setting in p0112, p0115, the current controller sampling time is automatically reduced to 250 µs. If the standard values were changed, then the current controller sampling time (p0112, p0115) should be appropriately set.
  - increase the DP clock cycle for operation with a clock-cycle synchronous PROFIBUS so that there is a multiple clock cycle ratio of at least 4:1 between the DP clock cycle and the current controller sampling time. A clock cycle ratio of at least 8:1 is recommended.
  - With firmware version 2.5, please ensure that parameter p9510 is set to 1 in the drive (clock cycle synchronous operation).
For fault value = 106:
- set the parameters for the monitoring clock cycles the same (p10000 and p9500 / p9300).

For fault value = 107:
- Set an actual value sensing clock cycle that matches the current controller clock cycle (p9511 >= 4 * p0115[0], 8 * p0115[0]) is recommended.

Note:
An actual value sensing clock cycle (p9511) that is set too low, can sporadically mean that safety messages C01711/C30711 are output with message value 1020 or 1021.

For fault value = 108:
- set a suitable actual value sensing clock cycle in p9511.
- if the DP clock cycle is used as the actual value sensing clock cycle for operation with isochronous PROFIBUS (p9511 = 0), then a suitable DP clock cycle must be configured. This must be set to less than 8 ms. If this is not possible, then p9511 must be set to the required actual value sensing clock cycle (< 8 ms).
- For SIMOTION D410-2, a suitable multiple of the DP clock cycle (e.g. 1, 2, 3, 4, 5, 6, 8, 10) must be parameterized. Otherwise, the clock cycle must be set to less than 8 ms.

For fault value = 109:
- set the actual value sensing clock cycle in p9511 to the same value as the current controller clock cycle (p0115[0]).

The following applies to SINAMICS S110:
- set the actual value sensing clock cycle to p9511 = 250 µs.

For fault value = 110:
- set the actual value sensing clock cycle in p9511 to 2 ms or higher.

For fault value = 111:
- set the monitoring clock cycle in p9500 as an integer multiple of the sampling time of the current controller (p0115[0]).

Re fault value = 200, 201:
- Increase the current controller sampling time (p0115[0]).
- If required, reduce the number of components connected to the corresponding DRIVE-CLiQ line, or distribute the components across several DRIVE-CLiQ sockets.

For fault value = 202:
- Set the current controller sampling time to a sensible value (p0115[0]).

Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated

---

**F01653**

**SI CU: PROFIBUS/PROFINET configuration error**

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** NONE (OFF1, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** There is a PROFIBUS/PROFINET configuration error for using Safety Integrated monitoring functions with a higher-level control (SINUMERIK or F-PLC).

Note:
For safety functions that have been enabled, this fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):
200: A safety slot for receive data from the control has not been configured.
210, 220: The configured safety slot for the receive data from the control has an unknown format.
230: The configured safety slot for the receive data from the F-PLC has the incorrect length.
231: The configured safety slot for the receive data from the F-PLC has the incorrect length.
240: The configured safety slot for the receive data from the SINUMERIK has the incorrect length.
250: A PROFIsafe slot is configured in the higher-level F control, however PROFIsafe is not enabled in the drive.
300: A safety slot for the send data to the control has not been configured.
310, 320: The configured safety slot for the send data to the control has an unknown format.
330: The configured safety slot for the send data to the F-PLC has the incorrect length.
331: The configured safety slot for the send data to the F-PLC has the incorrect length.
340: The configured safety slot for the send data to the SINUMERIK has the incorrect length.

**Remedy:**
The following generally applies:
- check and, if necessary, correct the PROFIBUS/PROFINET configuration of the safety slot on the master side.
- upgrade the Control Unit software.

For fault value = 250:
- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.
Re fault value = 231, 331:
- configure the PROFIsafe telegram matching the parameterization in the F-PLC.
The following applies for p9501.30 = 1 (F-DI via PROFIsafe is enabled):
- PROFIsafe telegram 900 must be configured.
For p9501.30 = 0 (F-DI not enabled via PROFIsafe), the following applies:
- PROFIsafe telegram 30 must be configured.

<table>
<thead>
<tr>
<th>A01654 (F)</th>
<th>SI CU: Deviating PROFIsafe configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The configuration of a PROFIsafe telegram in the higher-level control (F-PLC) does not match the parameterization in the drive. Note: This message does not result in a safety stop response. Alarm value (r2124, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>1: A PROFIsafe telegram is configured in the higher-level control, however PROFIsafe is not enabled in the drive (p9601.3).</td>
</tr>
<tr>
<td></td>
<td>2: PROFIsafe is parameterized in the drive; however, a PROFIsafe telegram has not been configured in the higher-level control.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>The following generally applies:</td>
</tr>
<tr>
<td></td>
<td>- check and, if necessary, correct the PROFIsafe configuration in the higher-level control.</td>
</tr>
<tr>
<td></td>
<td>Re alarm value = 1:</td>
</tr>
<tr>
<td></td>
<td>- remove the PROFIsafe configuring in the higher-level F control or enable PROFIsafe in the drive.</td>
</tr>
<tr>
<td></td>
<td>Re alarm value = 2:</td>
</tr>
<tr>
<td></td>
<td>- configure the PROFIsafe telegram to match the parameterization in the higher-level F-control.</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F01655</th>
<th>SI CU: Align monitoring functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>An error has occurred when aligning the Safety Integrated monitoring functions on the Control Unit (CU) and Motor Module (MM). Control Unit and Motor Module were not able to determine a common set of supported SI monitoring functions.</td>
</tr>
<tr>
<td></td>
<td>- there is either a DRIVE-CLIQ communication error or communication has failed.</td>
</tr>
<tr>
<td></td>
<td>- Safety Integrated software releases on the Control Unit and Motor Module are not compatible with one another.</td>
</tr>
<tr>
<td>Note:</td>
<td>This fault results in a STOP A that cannot be acknowledged.</td>
</tr>
<tr>
<td>Fault value (r0949, interpret hexadecimal):</td>
<td>Only for internal Siemens troubleshooting.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
</tr>
<tr>
<td></td>
<td>- upgrade the Motor Module software.</td>
</tr>
<tr>
<td></td>
<td>- upgrade the Control Unit software.</td>
</tr>
<tr>
<td></td>
<td>- check the electrical cabinet design and cable routing for EMC compliance</td>
</tr>
<tr>
<td>Note:</td>
<td>CU: Control Unit</td>
</tr>
<tr>
<td></td>
<td>MM: Motor Module</td>
</tr>
<tr>
<td></td>
<td>SI: Safety Integrated</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
F01656  SI CU: Motor Module parameter error
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  When accessing the Safety Integrated parameters for the Motor Module (MM) in the non-volatile memory, an error has occurred.
        This fault results in a STOP A that can be acknowledged.
        Fault value (r0949, interpret decimal):
        129:
        - safety parameters for the Motor Module corrupted.
        - drive with enabled safety functions was possibly copied offline using the commissioning software and the project downloaded.
        131: Internal Motor Module software error.
        132: Communication errors when uploading or downloading the safety parameters for the Motor Module.
        255: Internal software error on the Control Unit.
Remedy:
        - re-commission the safety functions.
        - upgrade the Control Unit software.
        - upgrade the Motor Module software.
        - replace the memory card or Control Unit.
        For fault value = 129:
        - activate the safety commissioning mode (p0010 = 95).
        - adapt the PROFIsafe address (p9610).
        - start the copy function for SI parameters (p9700 = D0 hex).
        - acknowledge data change (p9701 = DC hex).
        - exit the safety commissioning mode (p0010 = 0).
        - save all parameters (p0977 = 1 or "copy RAM to ROM").
        - carry out a POWER ON (power off/on) for all components.
        For fault value = 132:
        - check the electrical cabinet design and cable routing for EMC compliance
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated

F01657  SI CU: PROFIsafe telegram number invalid
Message value:
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  POWER ON
Cause:  The PROFIsafe telegram number set in p9611 is not valid.
        When PROFIsafe is enabled (p9601.3 = 1), then a telegram number greater than zero must be entered in p9611.
        This fault does not result in a safety stop response.
Note:
See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)
Remedy:
Check the telegram number setting (p9611).

F01658  SI CU: PROFIsafe telegram number not equal
Message value:
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The PROFIsafe telegram number is set differently in p9611 and p60022.
        For p9611 not equal to 998, the following applies:
        - The telegram number must be identically set in both parameters.
        - As a result of the compatibility to firmware versions < 4.5, then only the values 0 and 30 are permitted in p60022.
### Faults and alarms

#### List of faults and alarms

**Note:**
This fault does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)

**Remedy:**
Match the telegram number in both parameters so that they are the same (p9611, p60022).

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01659</td>
<td>SI CU: Write request for parameter rejected</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The write request for one or several Safety Integrated parameters on the Control Unit (CU) was rejected.</td>
</tr>
</tbody>
</table>

**Note:**
This fault does not result in a safety stop response.

**Fault value (r0949, interpret decimal):**
1: The Safety Integrated password is not set.
2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.
3: The interconnected STO input is in the simulation mode.
10: An attempt was made to enable the STO function although this cannot be supported.
11: An attempt was made to enable the SBC function although this cannot be supported.
12: An attempt was made to enable the SBC function although this cannot be supported for a parallel circuit configuration (p9671.14).
13: An attempt was made to enable the SS1 function although this cannot be supported.
14: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on the CU and MM is different.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
16: An attempt was made to enable the STO function although this cannot be supported when the internal voltage protection (p1231) is enabled.
17: An attempt was made to enable the PROFIsafe function although this cannot be supported for a parallel circuit configuration.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
19: An attempt was made to enable the SBA (Safe Brake Adapter), although this cannot be supported.
20: An attempt was made to enable the motion monitoring functions integrated in the drive and the STO function, both controlled via F-DI.
21: An attempt was made to enable the motion monitoring functions integrated in the drive for a parallel connection, although these cannot be supported.
22: An attempt was made to enable the Safety Integrated functions although these cannot be supported by the connected Power Module.
23: For ESR, an attempt was made to enable the delay for pulse suppression, although this cannot be supported.
24: An attempt was made to enable the SBC function, although no power unit data set is set for the brake control (p7015 = 99).
25: An attempt was made to parameterize a PROFIsafe telegram although this cannot be supported.
26: At a digital input of the Control Unit, an attempt was made to activate the simulation mode (p0795), which is used by Safety Integrated (p10049).
33: An attempt was made to enable the motion monitoring functions without selection integrated in the drive (p9601.5, p9801.5), although this cannot be supported.

**Remedy:**

For fault value = 1:
- set the Safety Integrated password (p9761).
For fault value = 2:
- Inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.
For fault value = 3:
- end the simulation mode for the digital input (p0795).
Re fault value = 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23:
- check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 16:
- inhibit the internal voltage protection (p1231).
For fault value = 20:
- correct setting in p9601.
For fault value = 22:
- use a Power Module that supports the Safety Integrated functions.
For fault value = 24:
- set the power unit data set for the holding brake (p7015).
For fault value = 25:
- use a Power Module that supports the PROFIsafe telegram selection.
- Correct the telegram number setting (p9611).
For fault value = 26:
- check whether p10049 is set. Also check p10006 and p10009. Check whether in p10046, p10047 a test top of the FDO with a read back input is parameterized.
- correct the setting in p9611.
For fault value = 33:
- Deselect motion monitoring functions without selection integrated in drive (p9601.5, p9801.5) and select safety functions that are supported (see p9771/p9871),
or:
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

Note:
CU: Control Unit
ESR: Extended Stop and Retract
MM: Motor Module
SBA: Safe Brake Adapter
SBC: Safe Brake Control
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill
See also: p9501 (SI Motion enable safety functions (Control Unit)), p9601 (SI enable, functions integrated in the drive (Control Unit)), p9620 (SI signal source for STO (SH)/SBC/SS1 (Control Unit)), p9761 (SI password input), p9801 (SI enable, functions integrated in the drive (Motor Module))

F01659 SI CU: Write request for parameter rejected
Message value: %1
Drive object: TM54F_MA, TM54F_SL
Reaction: IMMEDIATELY (POWER ON)

The write request for one or several Safety Integrated parameters on the Control Unit (CU) was rejected.

Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
1: The Safety Integrated password is not set.
2: A reset of the drive parameters was selected. However, the Safety Integrated parameters were not reset, as Safety Integrated is presently enabled.
3: The interconnected STO input is in the simulation mode.
10: An attempt was made to enable the STO function although this cannot be supported.
11: An attempt was made to enable the SBC function although this cannot be supported.
12: An attempt was made to enable the SBC function although this cannot be supported for a parallel circuit configuration (r9871.14).
13: An attempt was made to enable the SS1 function although this cannot be supported.
14: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on the CU and MM is different.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
16: An attempt was made to enable the STO function although this cannot be supported when the internal voltage protection (p1231) is enabled.
17: An attempt was made to enable the PROFIsafe function although this cannot be supported for a parallel circuit configuration.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
19: An attempt was made to enable the SBA (Safe Brake Adapter), although this cannot be supported.

20: An attempt was made to enable the motion monitoring functions integrated in the drive and the STO function, both controlled via F-DI.

21: An attempt was made to enable the motion monitoring functions integrated in the drive for a parallel connection, although these cannot be supported.

22: An attempt was made to enable the Safety Integrated functions although these cannot be supported by the connected Power Module.

23: For ESR, an attempt was made to enable the delay for pulse suppression, although this cannot be supported.

24: An attempt was made to enable the SBC function, although no power unit data set is set for the brake control (p7015 = 99).

25: An attempt was made to parameterize a PROFIsafe telegram although this cannot be supported.

26: At a digital input of the Control Unit, an attempt was made to activate the simulation mode (p0795), which is used by Safety Integrated (p10049).

33: An attempt was made to enable the motion monitoring functions without selection integrated in the drive (p9601.5, p9801.5), although this cannot be supported.

See also: p0970, p3900, r9771, r9871

Remedy:

For fault value = 1:
- set the Safety Integrated password (p10061).

For fault value = 2:
- Inhibit Safety Integrated (p9501, p9601) or reset safety parameters (p0970 = 5), then reset the drive parameters again.

For fault value = 3:
- end the simulation mode for the digital input (p0795).

Re fault value = 10, 11, 12, 13, 14, 15, 17, 18, 19, 21, 22, 23:
- check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 16:
- inhibit the internal voltage protection (p1231).

For fault value = 20:
- correct setting in p9601.

For fault value = 22:
- use a Power Module that supports the Safety Integrated functions.

Note:
CU: Control Unit
ESR: Extended Stop and Retract
MM: Motor Module
SBA: Safe Brake Adapter
SBC: Safe Brake Control
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

See also: p9501 (SI Motion enable safety functions (Control Unit)), p9601 (SI enable, functions integrated in the drive (Control Unit)), p9620 (SI signal source for STO (SH)/SBC/SS1 (Control Unit)), p9761 (SI password input), p9801 (SI enable, functions integrated in the drive (Motor Module))
### F01661 SI CU: Simulation of the safety inputs active

**Message value:** Fault cause: %1 bin  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The simulation of the digital inputs of the Control Unit (p0795) is active. It is not permissible that safety inputs (refer to p9620, p10022 ... p10032) are simulated. Fault value (r0949, interpret binary): The display bits indicate which Dis may not be simulated.  
**Remedy:** Deactivate the simulation of the digital inputs of the Control Unit for the safety inputs (refer to p795) and acknowledge the fault.

### F01663 SI CU: Copying the SI parameters rejected

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** One of the following values is saved in p9700 or was entered offline: 87 or 208. This is the reason that when booting, an attempt is made to copy SI parameters from the Control Unit to the Motor Module. However, no safety-relevant function has been selected on the Control Unit (p9501 = 0, p9601 = 0). Copying was rejected for safety reasons. As a consequence, inconsistent parameterization can occur in both monitoring channels, which in turn results in additional error messages. Especially for inconsistent enabling of the safety functions on both monitoring channels (p9601 = 0, p9801 <> 0), fault F30625 is output.  
**Note:** This fault does not result in a safety stop response. See also: p9700 (SI Motion copy function)  
**Remedy:** - Set p9700 to 0.  
- Check p9501 and p9601 and if required, correct.  
- Restart the copying function by entering the corresponding value into p9700. Alternatively, using the STARTER commissioning tool, perform the following steps in the online mode:  
  - Call the "Safety Integrated" screen form (the field "Select safety functions" is at "No Safety Integrated").  
  - Click on "Change settings".  
  - Click on "Activate settings" (as a consequence, Safety Integrated is inhibited on both monitoring channels).  
  - save all parameters (p0977 = 1 or "copy RAM to ROM").  
  - carry out a POWER ON (power off/on) for all components.

### F01664 SI CU: No automatic firmware update

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** During booting, the system detected that the "Firmware update automatic" function (p7826 = 1) was not activated. This function must be activated for automatic firmware updates/downgrades to prevent impermissible version combinations when safety functions are enabled.  
**Note:** This fault does not result in a safety stop response. See also: p7826 (Firmware update automatic)  
**Remedy:** When safety functions are enabled (p9501 <> 0 and/or p9601 <> 0):  
1. Activate the "Firmware update automatic" function (p7826 = 1).  
2. Save the parameters (p0977 = 1) and carry out a POWER ON. When de-activating the safety functions (p9501 = 0, p9601 = 0), the fault can be acknowledged after exiting the safety commissioning mode.
### F01665  SI CU: System is defective

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset). Fault value (r0949, interpret hexadecimal): 200000 hex, 400000 hex, 8000yy hex (yy any): - Fault in the actual booting/operation. 800004 hex: - Parameters p9500/p9300 are, under certain circumstances, not the same. In addition, Safety message C01711/C30711 is displayed. Additional values: - defect before the last time that the system booted.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- carry out a POWER ON (power off/on). - upgrade firmware to later version. - contact the Hotline. Re fault value = 200000 hex, 400000 hex, 8000yy hex (yy any): - ensure that the Control Unit is connected to the Power Module. Re fault value = 800004 hex: - Check that parameters p9500/p9300 are the same.</td>
</tr>
</tbody>
</table>

### A01666 (F)  SI Motion CU: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement

<table>
<thead>
<tr>
<th>Message value</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds. If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the &quot;Internal Event Acknowledge&quot; signal) if a wire breaks or one of the two digital inputs bounces.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Set the fail-safe digital input (F-DI) to a logical 0 signal (p10006). Note: F-DI: Failsafe Digital Input</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### A01669 (F, N)  SI Motion: Unfavorable combination of motor and power unit

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The combination of motor and power unit used is not suitable for using safe motion monitoring functions without an encoder. The ratio between the power unit rated current (r0207[0]) and rated motor current (p0305) is greater than 5. Alarm value (r2124, interpret decimal): Number of the motor data set, which caused the fault. Notice: If this alarm is not observed, then message C01711 or C30711 – with the value 1041 ... 1044 – can sporadically occur.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Use a suitable power unit with a lower power rating or a motor with a higher power rating.</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>
### F01670  SI Motion: Invalid parameterization Sensor Module

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The parameterization of a Sensor Module used for Safety Integrated is not permissible. 

**Note:**  
This fault results in a STOP A that cannot be acknowledged.  
Fault value (r0949, interpret decimal):  
1: No encoder was parameterized for Safety Integrated.  
2: An encoder was parameterized for Safety Integrated that does not have an A/B track (sine/cosine).  
3: The encoder data set selected for Safety Integrated is still not valid.  
4: A communication error with the encoder has occurred.  
5: Number of relevant bits in the encoder coarse position invalid.  
6: DRIVE-CLiQ encoder configuration invalid.  
7: Non-safety relevant component of the encoder coarse position for the linear DRIVE-CLiQ encoder not valid.  
8: Parameterized Safety comparison algorithm not supported.  
9: Relationship between the grid division and measuring step for linear DRIVE-CLiQ encoder is not binary.  
10: For an encoder used for Safety Integrated, not all of the Drive Data Sets (DDS) are assigned to the same Encoder Data Set (EDS) (p0187 ... p0189).  

**Remedy:**  
For fault value = 1, 2:  
- use and parameterize an encoder that Safety Integrated supports (encoder with track A/B sine-wave, p0404.4 = 1).  
For fault value = 3:  
- check whether the drive or drive commissioning function is active and if required, exit this (p0009 = p00010 = 0), save the parameters (p0971 = 1) and carry out a POWER ON  
For fault value = 4:  
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Sensor Module involved and if required, carry out a diagnostics routine for the faults identified.  
For fault value = 5:  
- p9525 = 0 (not permissible). Check the encoder parameterization on the Sensor Modules involved.  
For fault value = 6:  
- check p9515.0 (for DRIVE-CLiQ encoders, the following applies: p9515.0 = 1). Check the encoder parameterization on the Sensor Modules involved.  
For fault value = 7:  
- p12033 for an encoder used for Safety Integrated is not equal to 1. Use a linear DRIVE-CLiQ and parameterize for p12033 = 1.  
For fault value = 8:  
- check p9541. Use and parameterize an encoder that implements an algorithm supported by Safety Integrated.  
For fault value = 9:  
- check p9514 and p9522. Use an encoder and parameterize, where the ratio between p9514 and p9522 is binary.  
For fault value = 10:  
- align the EDS assignment of all of the encoders used for Safety Integrated (p0187 ... p0189).  
For fault value = 11:  
- p12036 for an encoder used for Safety Integrated is not equal to 0. Use a linear DRIVE-CLiQ and parameterize for p12036 = 0.  
**Note:**  
SI: Safety Integrated

### F01671  SI Motion: Parameterization encoder error

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The parameterization of the encoder used by Safety Integrated is different to the parameterization of the standard encoder. 

**Note:**  
This fault does not result in a safety stop response.  
Fault value (r0949, interpret decimal):  
Parameter number of the non-corresponding safety parameter.
Remedy: Align the encoder parameterization between the safety encoder and the standard encoder.

Notice:
SI: Safety Integrated

F01672  SI CU: Motor Module software/hardware incompatible
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Motor Module software does not support safe motion monitoring or is not compatible to the software on the Control Unit or there is a communications error between the Control Unit and Motor Module.

Notice:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
1: The existing Motor Module software does not support the safe motion monitoring function.
2, 3, 6, 8: There is a communications error between the Control Unit and Motor Module.
4, 5, 7: The existing Motor Module software is not compatible to the software on the Control Unit.
9,10,11,12: The actual Motor Module software does not support safe encoderless motion monitoring.
13: At least one Motor Module in parallel operation does not support the safe motion monitoring function.

Remedy:
- check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.
For fault value = 1:
- use a Motor Module that supports safe motion monitoring.
Re fault value = 2, 3, 6, 8:
- check whether there is a DRIVE-CLIQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
Re fault value = 4, 5, 7, 9, 13:
- upgrade the Motor Module software.

Notice:
SI: Safety Integrated

F01673  SI Motion: Sensor Module software/hardware incompatible
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Sensor Module software and/or hardware does not support the safe motion monitoring function with the higher-level control.

Notice:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- upgrade the Sensor Module software.
- use a Sensor Module that supports the safe motion monitoring function.

Notice:
SI: Safety Integrated

F01674  SI Motion CU: Safety function not supported by PROFIsafe telegram
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: POWER ON
Cause: The monitoring function enabled in p9501 and p9601 is not supported by the currently set PROFIsafe telegram (p9611).

Notice:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret bitwise binary):
Bit 24 = 1:
Transfer SLS (SG) limit value via PROFIsafe not supported (p9501.24).
### Faults and alarms

#### List of faults and alarms

Bit 25 = 1: 
Transfer safe position via PROFIsafe is not supported (p9501.25).

**Remedy:**
- Deselect the monitoring function involved (p9501, p9601).
- Set the matching PROFIsafe telegram (p9611).

**Note:**
SI: Safety Integrated  
SLS: Safely-Limited Speed / SG: Safely reduced speed  
SP: Safe Position

#### F01680  
**SI Motion CU: Checksum error safety monitoring functions**

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<tr>
<th>Message value:</th>
<th>%1</th>
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<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
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<td>Reaction:</td>
<td>OFF2</td>
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<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
</tbody>
</table>
| Cause:         | The actual checksum calculated by the drive and entered in r9728 via the safety-relevant parameters does not match the reference checksum saved in p9729 at the last machine acceptance.  
Safety-relevant parameters have been changed or a fault is present.

**Note:**
This fault results in a STOP A that can be acknowledged.

**Fault value (r0949, interpret decimal):**
0: Checksum error for SI parameters for motion monitoring.
1: Checksum error for SI parameters for actual values.
2: Checksum error for SI parameters for component assignment.

**Remedy:**
- Check the safety-relevant parameters and if required, correct.
- Execute the function "Copy RAM to ROM".
- Perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- Carry out an acceptance test.

#### F01681  
**SI Motion CU: Incorrect parameter value**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Parameter: %1, supplementary information: %2</th>
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<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
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<tr>
<td>Reaction:</td>
<td>OFF2</td>
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<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
</tbody>
</table>
| Cause:         | The parameter cannot be parameterized with this value.  
Note:  
This fault does not result in a safety stop response.

**Fault value (r0949, interpret decimal):**
yyyyxxxx dec:  
yyyy = supplementary information,  
xxxx = parameter  
yyyy = 0: no additional information available.  
xxxx = 9500:  
p9500 is not equal to p9300 or not an integer multiple of the sampling time of the current controller (p0115[0]).  
xxxx = 9501:  
It is not permissible to enable the function "n<nx hysteresis and filtering" (p9501.16) in conjunction with the function "extended functions without selection" (p9601.5).  
xxxx = 9505:  
When SLP is active (p9501.1 = 1), the modulo function is activated and this is not permitted (p9505 not equal to 0).  
xxxx = 9511:  
yyyy = 1:  
p9511 is not equal to p9311.  
yyyy = 2:  
On a double axis motor module, between the drive objects, no different values in p9511 and p0115[0] is permitted.  
xxxx = 9522:  
The gear stage was set too high.  
xxxx = 9544:  
For linear axes, the maximum value is limited to 1 mm.  
xxxx = 9547:  
p9547 is too low.  
xxxx = 9585:  
For Safety without encoder and synchronous motor, a value of 4 must be entered into p9585.
List of faults and alarms

Faults and alarms

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xxxx = 9601:
yyy = 1:
If motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1) are enabled, then PROFIsafe (p9601.3 = 1) or onboard F-DI (p9601.4 = 1) is not possible.

yyy = 2:
Extended functions without selection (p9601.5 = 1) are enabled, without enabling motion monitoring functions integrated in the drive (p9601.2).

yyy = 3:
Onboard F-DI are enabled, without enabling motion monitoring functions integrated in the drive (p9601.2).

yyy = 4:
Onboard F-DI are enabled, then it is not permissible to simultaneously set PROFIsafe and F-DI via PROFIsafe (p9501.30).

yyy = 5:
Transfer of the SLS limit value via PROFIsafe (p9501.24) has been enabled, without enabling PROFIsafe.

yyy = 6:
Transfer of the safe position via PROFIsafe (p9501.25) has been enabled, without enabling PROFIsafe.

Remedy:
Correct parameter (if required, also on the second monitoring channel, p9801).

xxxx = 9500:
- Transfer of the safe position via PROFIsafe (p9501.25) has been enabled, without enabling PROFIsafe.
Set p9500 "SI Motion monitoring clock cycle" as an integer multiple of p115[0] "Current controller sampling time". Align parameters 9300 and 9500, backup parameters (p0971 = 1) and carry out a POWER ON.

With hysteresis/filtering enabled (p9501.16 = 1), the following applies:
- Set parameters p9546/p9346 and p9547/p9347 acc. to the following rule: p9546 >= 2 x p9547; p9346 >= 2 x p9347.
- The following rule must also be adhered to when actual value synchronization (p9501.3 = 1) is enabled: p9549 <= p9547; p9349 <= p9347.

xxx = 9501:
- Correct parameters p9501.16 and p9301.16, or deselect the extended functions without selection (p9601.5).

xxx = 9505:
Correct parameter p9501.1 or p9505.

xxx = 9507:
Set synchronous or induction motor according to p0300.

xxx = 9511:
Align parameters p9311 and p9511, backup parameters (p0971 = 1) and carry out a POWER ON.

xxx = 9517:
Also check p9516.0.

xxx = 9522:
Correct parameters.

xxx = 9544:
Correct parameter (for linear axes, the maximum value is limited to 1 mm).

xxx = 9585:
Correct parameter (if required, also on the second monitoring channel, p9385).

xxx = 9601:

yyy = 1:
Only enable motion monitoring functions integrated in the drive (p9601.2 = 1) and extended functions without selection (p9601.5 = 1), or only enable PROFIsafe (p9601.3 = 1) or only onboard F-DI (p9601.4 = 1).

yyy = 2, 3:
Enable motion monitoring functions integrated in the drive (p9601.2 = 1).

yyy = 4:
If onboard F-DI are enabled, then it is not permissible to simultaneously set PROFIsafe and F-DI via PROFIsafe (p9501.30), deselect PROFIsafe functionality or onboard F-DI.

yyy = 5:
To transfer the SLS limit values via PROFIsafe (p9501.24 = 1), also enable PROFIsafe (p9601.3 = 1) and motion monitoring functions integrated in the drive (p9601.2 = 1).

yyy = 6:
For the safe position via PROFIsafe (p9501.25 = 1), also enable PROFIsafe (p9601.3 = 1) and motion monitoring functions integrated in the drive (p9601.2 = 1).
F01682  SI Motion CU: Monitoring function not supported

Message value: %1
Drive object: VECTOR_G
Reaction: IMMEDIATELY (POWER ON)
Acknowledge: IMMEDIATELY (POWER ON)

Cause: The monitoring function enabled in p9501, p9601, p9801, p9307 or p9507 is not supported in this firmware version.
Note: This fault results in a STOP A that cannot be acknowledged.

Fault value (r0949, interpret decimal):
1: Monitoring function SLP not supported (p9501.1).
2: Monitoring function SCA not supported (p9501.7 and p9501.8 ... 15 and p9503).
3: Monitoring function SLS override not supported (p9501.5).
4: Monitoring function external ESR activation not supported (p9501.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9501.30).
6: Enable actual value synchronization not supported (p9501.3).
9: Monitoring function not supported by the firmware or enable bit not used.
10: Monitoring functions only supported for a SERVO drive object.
11: Encoderless monitoring functions (p9506.1) only supported for motion monitoring integrated in the drive (p9601.2).
12: Monitoring functions for ncSI are not supported for CU305.
20: Motion monitoring functions integrated in the drive are only supported in conjunction with PROFIsafe (p9501, p9601.1 ... 2 and p9801.1 ... 2).
21: Enable a safe motion monitoring function (in p9501), not supported for enabled basic functions via PROFIsafe (p9601.2 = 0, p9601.3 = 1).
22: Encoderless monitoring functions in "chassis" format not supported.
23: CU240 does not support monitoring functions requiring an encoder.
24: Monitoring function SDI not supported (p9501.17).
25: Drive-integrated motion monitoring functions not supported (p9501, p9601.2).
26: Hysteresis and filtering for SSM monitoring function without an encoder not supported (p9501.16).
27: This hardware does not support onboard F-DI and F-DO.
29: SINAMICS S120M: SSM encoderless not supported.
31: This hardware does not support transfer SLS (SG) limit value via PROFIsafe (p9301/p9501.24).
33: Safety functions without selection not supported (p9601.5, p9801.5).
34: This module does not support safe position via PROFIsafe.
36: Function "SS1 without OFF3" not supported.
40: SIMOTION D410-2: Motion monitoring functions integrated in the drive or PROFIsafe control not supported.
41: SIMOTION D410-2: Safety functions not supported for the "Chassis" format.
42: Motion monitoring functions SLP and SP not supported for D4x5-2 and CX32-2 (p9501.1, 25).
43: Motion monitoring functions SLP and SP as well as PROFIsafe telegrams 31/901/902 not supported for D410 (p9501.1, 24, 25, 30 / 9611).
9586: Set value of p9586/p9386 is greater than the supported maximum value.
9588: Set value of p9588/p9388 is greater than the supported maximum value.
9589: Set value of p9589/p9389 is greater than the supported maximum value.

Remedy: - De-select the monitoring function involved (p9501, p9503, p9506, p9601, p9801, p9307, p9507).
- Reduce the set value (p9586, p9588, p9589).

Note:
ESR: Extended Stop and Retract
SCA: Safe Cam / SN: Safe software cam
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
SLS: Safely-Limited Speed / SG: Safely reduced speed
SP: Safe Position
See also: p9501 (SI Motion enable safety functions (Control Unit)), p9503 (SI Motion SCA (SN) enable (Control Unit)), r9771 (SI common functions (Control Unit))
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<th>Cause</th>
<th>Remedy</th>
<th>Note</th>
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<tbody>
<tr>
<td>F01683</td>
<td>SI Motion CU: SOS/SLS enable missing</td>
<td></td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The safety-relevant basic function &quot;SOS/SLS&quot; is not enabled in p9501 although other safety-relevant monitoring functions are enabled. This fault does not result in a safety stop response.</td>
<td>Enable the function &quot;SOS/SLS&quot; (p9501.0) and carry out a POWER ON. Note: SI: Safety Integrated SLS: Safely-Limited Speed / SG: Safely reduced speed SOS: Safe Operating Stop / SBH: Safe operating stop See also: p9501 (SI Motion enable safety functions (Control Unit))</td>
<td></td>
</tr>
<tr>
<td>F01684</td>
<td>SI Motion: Safely limited position limit values interchanged</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>For the function &quot;Safely-Limited Position&quot; (SE), a lower value is in p9534 than in p9535. This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): 1: Limit values SLP1 interchanged. 2: Limit values SLP2 interchanged.</td>
<td>Correct the limit values in p9534 and p9535 and carry out a POWER ON. Note: SI: Safety Integrated SLP: Safely-Limited Position / SE: Safe software limit switches</td>
<td></td>
</tr>
<tr>
<td>F01685</td>
<td>SI Motion CU: Safely-limited speed limit value too high</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The limit value for the function &quot;Safely-Limited Speed&quot; (SLS) is greater than the speed that corresponds to an encoder limit frequency of 500 kHz. This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): Maximum permissible speed.</td>
<td>Correct the limit values for SLS and carry out a POWER ON. Note: SI: Safety Integrated SLS: Safely-Limited Speed / SG: Safely reduced speed See also: p9531 (SI Motion SLS (SG) limit values (Control Unit))</td>
<td></td>
</tr>
<tr>
<td>F01686</td>
<td>SI Motion: Illegal parameterization cam position</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>At least one enabled &quot;Safety Cam&quot; (SCA) is parameterized in p9536 or p9537 too close to the tolerance range around the modulo position.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

The following conditions must be complied with to assign cams to a cam track:
- the cam length of cam x = p9536[x] - p9537[x] must be greater or equal to the cam tolerance + the position tolerance (= p9540 + p9542). This also means that for cams on a cam track, the minus position value must be less than the plus position value.
- the distance between 2 cams x and y (minus position value[y] - plus position value[x] = p9537[y] - p9536[x]) on a cam track must be greater than or equal to the cam tolerance + position tolerance (= p9540 + p9542).

Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Number of the "Safe Cam" with an illegal position.
See also: p9501 (SI Motion enable safety functions (Control Unit))

Remedy:
Correct the cam position and carry out a POWER ON.
Note:
SCA: Safe Cam / SN: Safe software cam
SI: Safety Integrated
See also: p9536 (SI Motion SCA (SN) plus cam position (Control Unit)), p9537 (SI Motion SCA (SN) plus cam position (Control Unit))

F01687  SI Motion: Illegal parameterization modulo value SCA (SN)
Message value:
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The parameterized modulo value for the "Safe Cam" (SCA) function is not a multiple of 360 000 mDegrees.
Note:
This fault does not result in a safety stop response.
Remedy:
Correct the modulo value for SCA and carry out a POWER ON.
Note:
SCA: Safe Cam / SN: Safe software cam
SI: Safety Integrated
See also: p9505 (SI Motion SP modulo value (Control Unit))

F01688  SI Motion CU: Actual value synchronization not permissible
Message value:
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
- It is not permissible to enable actual value synchronization for a 1-encoder system.
- It is not permissible to simultaneously enable actual value synchronization and a monitoring function with absolute reference (SCA/SLP).
- It is not permissible to simultaneously enable actual value synchronization and safe position via PROFIsafe.
Note:
This fault results in a STOP A that cannot be acknowledged.
Remedy:
- Either select the "actual value synchronization" function or parameterize a 2-encoder system.
- Either de-select the function "actual value synchronization" or the monitoring functions with absolute reference (SCA/SLP) and carry out a POWER ON.
- Either deselect the "actual value synchronization" function or do not enable "Safe position via PROFIsafe".
Note:
SCA: Safe Cam / SN: Safe software cam
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
SP: Safe Position
See also: p9501 (SI Motion enable safety functions (Control Unit)), p9526 (SI Motion encoder assignment second channel)
## List of faults and alarms

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<th>Description</th>
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<td>C01689</td>
<td>SI Motion: Axis re-configured</td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> Parameter: %1</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> OFF2</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> POWER ON</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> The axis configuration was changed (e.g. changeover between linear axis and rotary axis). Parameter p0108.13 is internally set to the correct value. Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): Parameter number of parameter that initiated the change. See also: p9502 (SI Motion axis type (Control Unit))</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> The following should be carried out after the changeover: - exit the safety commissioning mode (p0010). - save all parameters (p0977 = 1 or &quot;copy RAM to ROM&quot;). - carry out a POWER ON. Once the Control Unit has been switched on, safety message F01680 or F30680 indicates that the checksums in r9398[0] and r9728[0] have changed in the drive. The following must, therefore, be carried out: - activate safety commissioning mode again. - complete safety commissioning of the drive. - exit the safety commissioning mode (p0010). - save all parameters (p0977 = 1 or &quot;copy RAM to ROM&quot;). - carry out a POWER ON. Note: For the commissioning software, the units are only consistently displayed after a project upload.</td>
</tr>
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<tr>
<th>Fault Code</th>
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<tbody>
<tr>
<td>F01690</td>
<td>SI Motion: Data save problem for the NVRAM</td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> %1</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> All objects</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> Infeed: NONE (OFF1, OFF2) Vector: NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> POWER ON</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> There is insufficient memory space in the NVRAM on the drive to save parameters r9781 and r9782 (safety logbook). Note: This fault does not result in a safety stop response. Fault value (r0949, interpret decimal): 0: There is no physical NVRAM available in the drive. 1: There is no longer any free memory space in the NVRAM.</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> For fault value = 0: - use a Control Unit NVRAM. For fault value = 1: - de-select functions that are not required and that take up memory space in the NVRAM. - contact the Hotline. Note: NVRAM: Non-Volatile Random Access Memory (non-volatile read and write memory)</td>
</tr>
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<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>A01691 (F)</td>
<td>SI Motion: Ti and To unsuitable for DP cycle</td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> The configured times for PROFIBUS communication are not permitted and the DP cycle is used as the actual value acquisition cycle for the safe movement monitoring functions. Isochronous PROFIBUS: The sum of Ti and To is too high for the selected DP cycle. The DP cycle should be at least 1 current controller cycle greater than the sum of Ti and To. No isochronous PROFIBUS: The DP clock cycle must be at least 4x the current controller clock cycle.</td>
</tr>
</tbody>
</table>
Notice:
If this alarm is not observed, then message C01711 or C30711 – with the value 1020 ... 1021 – can sporadically occur.

Remedy:
Configure Ti and To low so that they are suitable for the DP cycle or increase the DP cycle time.
Alternative when SI monitoring integrated in the drive is enabled (p9601/p9801 > 0):
Use the actual value acquisition cycle p9511/p9311 and, in turn, set independently from DP cycle. The actual values sensing clock cycle must be at least 4x the current controller clock cycle. A clock cycle ratio of at least 8:1 is recommended.
See also: p9511 (SI Motion actual value sensing cycle clock (Control Unit))

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F01692 SI Motion CU: Parameter value not permitted for encoderless
Message value: Parameter: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The parameter cannot be set to this value if encoderless motion monitoring functions have been selected in p9506.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
Parameter number with the incorrect value.
See also: p9501 (SI Motion enable safety functions (Control Unit))
Remedy:
- Correct the parameter specified in the fault value.
- If necessary, de-select encoderless motion monitoring functions (p9506).
See also: p9501 (SI Motion enable safety functions (Control Unit))

A01693 (F) SI CU: Safety parameter settings changed, warm restart/POWER ON required
Message value: %1
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
Safety parameters have been changed; these will only take effect following a warm restart or POWER ON.
Notice:
All changed parameters of the safety motion monitoring functions will only take effect following a warm restart or POWER ON.
Alarm value (r2124, interpret decimal):
Parameter number of the safety parameter which has changed, necessitating a warm restart or POWER ON.
Remedy:
- carry out a warm restart (p0009 = 30, p0976 = 2, 3).
- carry out a POWER ON (power off/on) for all components.
Note:
Before performing an acceptance test, a POWER ON must be carried out for all components.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: POWER ON

F01694 (A) SI Motion CU: Firmware version Motor Module older Control Unit
Message value: -
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The firmware version of the Motor Module is older than the version of the Control Unit.
It is possible that safety functions are not available (r9771/r9871).
Note:
This message does not result in a safety stop response.
This message can also occur, if after an automatic firmware update, a POWER ON was not carried out (Alarm A01007).
Remedy: Upgrade the firmware of the Motor Module to a later version. See also: r9390 (SI Motion version safety motion monitoring (Motor Module)), r9590 (SI Motion version safety motion monitoring (Control Unit))

Reaction upon A: NONE
Acknowl. upon A: NONE

A01695 (F) SI Motion: Sensor Module was replaced
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A Sensor Module, which is used for safe motion monitoring functions, was replaced. The hardware replacement must be acknowledged. An acceptance test must be subsequently performed. Note: This message does not result in a safety stop response.

Remedy: Carry out the following steps using the STARTER commissioning software:
- press the "Acknowledge hardware replacement" button in the safety screen form.
- execute the function "Copy RAM to ROM".
- carry out a POWER ON (power off/on) for all components.
As an alternative, carry out the following steps in the expert list of the commissioning software:
- start the copy function for the node identifier on the drive (p9700 = 1D hex).
- acknowledge the hardware CRC on the drive (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
Then carry out an acceptance test (refer to the Safety Integrated Function Manual).
For SINUMERIK, the following applies:
HMI supports the replacement of components with Safety functions (operating area "Diagnostics" --> Softkey "Alarm list" --> Softkey "Confirm SI HW" etc.).
The precise procedure is given in the following document:
SINUMERIK Function Manual Safety Integrated
See also: p9700 (SI Motion copy function), p9701 (Acknowledge SI motion data change)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01696 (F) SI Motion: Testing of the motion monitoring functions selected when booting
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The test of the motion monitoring functions was already illegally active when booting. This is the reason that the test is only carried out again after selecting the forced checking procedure parameterized in p9705.
Note: This message does not result in a safety stop response. See also: p9705 (SI Motion: Test stop signal source)

Remedy: De-select the forced checking procedure of the safety motion monitoring functions and then select again. The signal source for initiation is parameterized in binector input p9705.
Notice: It is not permissible to use TM54F inputs to start the test stop. Note: SI: Safety Integrated See also: p9705 (SI Motion: Test stop signal source)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
A01697 (F)  SI Motion: Motion monitoring functions must be tested

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: The time set in p9559 for the forced checking procedure of the safety motion monitoring functions has been exceeded. A new test is required.
After next selecting the forced checking procedure parameterized in p9705, the message is withdrawn and the monitoring time is reset.

Note:
- This message does not result in a safety stop response.
- As the shutdown paths are not automatically checked during booting, an alarm is always issued once booting is complete.
- The test must be performed within a defined, maximum time interval (p9559, maximum of 9000 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.

See also: p9559 (SI Motion forced checking procedure timer (Control Unit)), p9705 (SI Motion: Test stop signal source)

Remedy: Carry out the forced checking procedure of the safety motion monitoring functions.
The signal source for initiation is parameterized in binector input p9705.

Notice:
- It is not permissible to use TM54F inputs to start the test stop.
- SI: Safety Integrated

See also: p9705 (SI Motion: Test stop signal source)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

A01698 (F)  SI CU: Commissioning mode active

Message value: -
Drive object: B_INF, TM54F_MA, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: The commissioning of the "Safety Integrated" function is selected.
This message is withdrawn after the safety functions have been commissioned.

Note:
- This message does not result in a safety stop response.
- In the safety commissioning mode, the "STO" function is internally selected.

See also: p0010

Remedy: Not necessary.

Note:
- CU: Control Unit
- SI: Safety Integrated

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY (POWER ON)

A01699 (F)  SI CU: Shutdown path must be tested

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: The time set in p9659 for the forced checking procedure of the safety shutdown paths has been exceeded. The safety shutdown paths must be re-tested.
After the next time the "STO" function is de-selected, the message is withdrawn and the monitoring time is reset.
List of faults and alarms

Note:
- This message does not result in a safety stop response.
- The test must be performed within a defined, maximum time interval (p9659, maximum of 9000 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.
See also: p9659 (SI forced checking procedure timer)

Remedy:
Select STO and then de-select again.

Note:
CU: Control Unit
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

C01700 SI Motion CU: STOP A initiated

Message value:
-

Drive object:
VECTOR_G

Reaction:
OFF2

Acknowledge:
IMMEDIATELY (POWER ON)

Cause:
The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of the Control Unit).
Possible causes:
- stop request from the second monitoring channel.
- pulses not suppressed after a parameterized time (p9557) after test stop selection.
- subsequent response to the message C01706 "SI Motion CU: SAM/SBR limit exceeded".
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01701 "SI Motion CU: STOP B initiated".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".

Remedy:
- remove the cause of the fault on the second monitoring channel.
- carry out a diagnostics routine for message C01706.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01701.
- carry out a diagnostics routine for message C01715.
- carry out a diagnostics routine for message C01716.
- check the value in p9557 (where available), increase the value if necessary, and carry out a POWER ON
- check the shutdown path of the Control Unit (check DRIVE-CLiQ communication if it has been implemented)
- replace the Motor Module/Power Module
- replace Control Unit.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: via the machine control panel in acceptance test mode only

Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SI: Safety Integrated

C01701 SI Motion CU: STOP B initiated

Message value:
-

Drive object:
VECTOR_G

Reaction:
NONE (OFF3)

Acknowledge:
IMMEDIATELY (POWER ON)

Cause:
The drive is stopped via a STOP B (braking along the OFF3 deceleration ramp).
As a result of this fault, after the time parameterized in p9556 has expired, or the speed threshold parameterized in p9560 has been undershot, message C01700 "STOP A initiated" is output.
Possible causes:
- stop request from the second monitoring channel.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01711 "SI Motion CU: Defect in a monitoring channel".
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List of faults and alarms

- subsequent response to the message C01707 "SI Motion CU: tolerance for safe operating stop exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded".

Remedy:
- remove the cause of the fault on the second monitoring channel.
- carry out a diagnostics routine for message C01714.
- carry out a diagnostics routine for message C01711.
- carry out a diagnostics routine for message C01707.
- carry out a diagnostics routine for message C01715.
- carry out a diagnostics routine for message C01716.

This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: via the machine control panel in acceptance test mode only

Note:
SI: Safety Integrated

C01706  SI Motion CU: SAM/SBR limit exceeded
Message value:  
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: Motion monitoring functions with encoder (p9506 = 0) or encoderless with set acceleration monitoring (p9506 = 3):
SAM - safe acceleration monitoring. After initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.
Motion monitoring functions encoderless with set brake ramp monitoring (p9506 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.
The drive is shut down by the message C01700 "SI Motion: STOP A initiated".

Remedy:
Check the braking behavior and, if necessary, adapt the tolerance for the "SAM" function or modify the parameter settings for the "SBR" function.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: via the machine control panel in acceptance test mode only
Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe ramp monitoring)
SI: Safety Integrated
See also: p9548 (SI Motion SAM actual velocity tolerance (Control Unit)), p9581 (SI Motion brake ramp reference value (Control Unit)), p9582 (SI Motion brake ramp delay time (Control Unit)), p9583 (SI Motion brake ramp monitoring time (Control Unit))

C01707  SI Motion CU: Tolerance for safe operating stop exceeded
Message value:  
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual position has distanced itself further from the target position than the standstill tolerance.
The drive is shut down by the message C01701 "SI Motion: STOP B initiated".

Remedy:
- check whether safety faults are present and if required carry out the appropriate diagnostic routines for the particular faults.
- check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis.
- carry out a POWER ON.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: via the machine control panel in acceptance test mode only
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9530 (SI Motion standstill tolerance (Control Unit))
### C01708  SI Motion CU: STOP C initiated

**Message value:** - 
**Drive object:** VECTOR_G 
**Reaction:** STOP2 
**Acknowledge:** IMMEDIATELY (POWER ON) 
**Cause:** The drive is stopped via a STOP C (braking along the OFF3 deceleration ramp). "Safe Operating Stop" (SOS) is activated after the parameterized time has expired. Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded". 
See also: p9552 (SI Motion transition time STOP C to SOS (SBH) (Control Unit))

**Remedy:**
- remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716. 
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe 
- motion monitoring functions with SINUMERIK: Via the machine control panel 

**Note:**
- SI: Safety Integrated 
- SOS: Safe Operating Stop / SBH: Safe operating stop

### C01709  SI Motion CU: STOP D initiated

**Message value:** - 
**Drive object:** VECTOR_G 
**Reaction:** NONE 
**Acknowledge:** IMMEDIATELY (POWER ON) 
**Cause:** The drive is stopped via a STOP D (braking along the path). "Safe Operating Stop" (SOS) is activated after the parameterized time has expired. Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded". 
See also: p9553 (SI Motion transition time STOP D to SOS (SBH) (Control Unit))

**Remedy:**
- remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716. 
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe 
- motion monitoring functions with SINUMERIK: Via the machine control panel 

**Note:**
- SI: Safety Integrated 
- SOS: Safe Operating Stop / SBH: Safe operating stop

### C01710  SI Motion CU: STOP E initiated

**Message value:** - 
**Drive object:** VECTOR_G 
**Reaction:** NONE 
**Acknowledge:** IMMEDIATELY (POWER ON) 
**Cause:** The drive is stopped via a STOP E (retraction motion). "Safe Operating Stop" (SOS) is activated after the parameterized time has expired. Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C01714 "SI Motion CU: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C01716 "SI Motion CU: tolerance for safe motion direction exceeded". 
See also: p9554 (SI Motion transition time STOP E to SOS (SBH) (Control Unit))
### Faults and alarms

#### List of faults and alarms

**Remedy:**
- remove the cause of the fault at the control.
- carry out a diagnostics routine for message C01714/C01715/C01716.

This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel

**Note:**
- SI: Safety Integrated
- SOS: Safe Operating Stop / SBH: Safe operating stop

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<th>SI Motion CU: Defect in a monitoring channel</th>
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<td>%1</td>
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<tr>
<td><strong>Drive object:</strong></td>
<td>VECTOR_G</td>
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<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY (POWER ON)</td>
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</tbody>
</table>

**Cause:**
When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then after the parameterized timer has expired, the message C01701 "SI Motion: STOP B initiated" is output.

The message value that resulted in a STOP F is displayed in r9725. The described message values involve the crosswise data comparison between the Control Unit and Motor Module. If the drive is operated together with a SINUMERIK, the message values are described in message 27001 of SINUMERIK.

The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- cycle times not set uniformly (p9500/p9300 and p9511/p9311)
- differently parameterized axis types (p9502/p9302),
- excessively fast cycle times (p9500/p9300, p9511/p9311).
- for message values 3, 44 ..., 57, 232 and 1-encoder systems, differently parameterized encoder values (p9516/p9316, p9517/p9317, p9518/p9318, p9520/p9320, p9521/p9321, p9522/p9322, p9526/p9326).
- incorrect synchronization.

**Message value (r9749, interpret decimal):**
- 0 to 999: Number of the cross-compared data that resulted in this fault.
- Message values that are not subsequently listed are only for internal Siemens troubleshooting.

0: Stop request from the other monitoring channel.
1: Status image of monitoring functions SOS, SLS or SLP (result list 1) (r9710[0], r9710[1]).
2: Status image of monitoring function SCA or n < nx (result list 2) (r9711[0], r9711[1]).
3: The position actual value differential (r9713) between the two monitoring channels is greater than the tolerance in p9542/p9342. When actual value synchronization is enabled (p9501.3/p9301.3), the velocity differential (based on the position actual value) is greater than the tolerance in p9549/p9349.
4: Error when synchronizing the crosswise data comparison between the two channels.
5: Function enable signals (p9501/p9301)
6: Limit value for SLS1 (p9531[0]/p9331[0])
7: Limit value for SLS2 (p9531[1]/p9331[1])
8: Limit value for SLS3 (p9531[2]/p9331[2])
9: Limit value for SLS4 (p9531[3]/p9331[3])
10: Standstill tol. (p9530/p9330)
11: Upper limit value for SLP1 (p9534[0]/p9334[0]).
12: Lower limit value for SLP1 (p9535[0]/p9335[0]).
13: Upper limit value for SLP2 (p9534[1]/p9334[1]).
14: Lower limit value for SLP2 (p9535[1]/p9335[1]).
31: Position tolerance (p9542/p9342) or (p9549/p9349) when actual value synchronization is enabled (p9501.3/p9301.3)
32: Position tolerance for safe referencing (p9544/p9344).
33: Time, velocity changeover (p9551/p9351)
35: Delay time, pulse canc. (p9556/p9356)
36: Checking time, pulse canc. (p9557/p9357)
37: Trans. time, STOP C to SOS (p9552/p9352)
38: Trans. time STOP D to SOS (p9553/p9353)
39: Trans. time, STOP E to SOS (p9554/p9354)
40: Stop response for SLS (p9561/p9361)
41: Stop response for SLP1 (p9562[0]/p9362[0])
42: Shutdown speed, pulse canc. (p9560/p9360)
List of faults and alarms

Possible cause 1 (during commissioning or parameter modification)
The tolerance value for the monitoring function is not the same on the two monitoring channels.
Possible cause 2 (during active operation)
The limit values are based on the actual value (r9713). If the safe actual values on the two monitoring channels do not match, the limit values, which have been set at a defined interval, will also be different (i.e. corresponding to fault value 3). This can be ascertained by checking the safe actual positions.

- **44: Position actual value (r9713) + limit value for SLS1 (p9531[0]/p9331[0]) * Safety monitoring clock cycle**
- **45: Position actual value (r9713) - limit value for SLS1 (p9531[0]/p9331[0]) * Safety monitoring clock cycle**
- **46: Position actual value (r9713) + limit value for SLS2 (p9531[1]/p9331[1]) * Safety monitoring clock cycle**
- **47: Position actual value (r9713) - limit value for SLS2 (p9531[1]/p9331[1]) * Safety monitoring clock cycle**
- **48: Position actual value (r9713) + limit value for SLS3 (p9531[2]/p9331[2]) * Safety monitoring clock cycle**
- **49: Position actual value (r9713) - limit value for SLS3 (p9531[2]/p9331[2]) * Safety monitoring clock cycle**
- **50: Position actual value (r9713) + limit value for SLS4 (p9531[3]/p9331[3]) * Safety monitoring clock cycle**
- **51: Position actual value (r9713) - limit value for SLS4 (p9531[3]/p9331[3]) * Safety monitoring clock cycle**

- **52: Standstill position + tolerance (p9530/9330)**
- **53: Standstill position - tolerance (p9530/9330)**
- **54: Position actual value (r9713) + limit value nx (p9546/p9346) + tolerance (p9542/p9342)**
- **55: Position actual value (r9713) + limit value nx (p9546/p9346)**
- **56: Position actual value (r9713) - limit value nx (p9546/p9346)**
- **57: Position actual value (r9713) - limit value nx (p9546/p9346) - tolerance (p9542/p9342)**

- **58: Actual stop request.**
- **75: Velocity limit nx (p9546, p9346).**
  When the function "n<nx: hysteresis and filtering" (p9501.16=1) is enabled, this fault value is also output for a different hysteresis tolerance (p9547/p9347).
- **76: Stop response for SLS1 (p9563[0]/p9363[0])**
- **77: Stop response for SLS2 (p9563[1]/p9363[1])**
- **78: Stop response for SLS3 (p9563[2]/p9363[2])**
- **79: Stop response for SLS4 (p9563[3]/p9363[3])**

- **80: Modulo value for SP for rotary axes (p9505/p9305).**
- **81: Velocity tolerance for SAM (p9548/p9348).**
- **82: SGEs for SLS correction factor.**
- **83: Acceptance test timer (p9555/p9355).**
- **84: Trans. time STOP F (p9555/p9355).**
- **85: Trans. time bus failure (p9550/p9350).**
- **86: ID 1-encoder system (p9526/p9326).**
- **87: Encoder assignment, second channel (p9526/p9326).**

- **89: Encoder limit freq.**
- **230: Filter time constant for n < nx.**
- **231: Hysteresis tolerance for n < nx.**
- **232: Smoothed velocity actual value.**
- **233: Limit value nx / safety monitoring clock cycle + hysteresis tolerance.**
- **234: Limit value nx / Safety monitoring clock cycle.**
- **235: Limit value nx / Safety monitoring clock cycle - hysteresis tolerance.**
- **236: Limit value nx / safety monitoring clock cycle - hysteresis tolerance.**
- **237: SGA n < nx.**
- **238: Speed limit value for SAM (p9568/p9368).**
- **239: Acceleration for SBR (p9581/p9381 and p9583/p9383).**
- **240: Inverse value of acceleration for SBR (p9581/p9381 and p9583/p9383).**
- **241: Deceleration time for SBR (p9582/p9382).**
- **242: Encoderless safety (p9506/p9306).**
- **243: Extended alarm acknowledgment (p9507/p9307).**
- **244: Encoderless actual value sensing filter time (p9567/p9367).**
- **245: Encoderless actual value sensing minimum current (p9568/p9368).**
- **246: Voltage tolerance acceleration (p9589/p9389).**
- **247: SDI tolerance (p9564/p9364).**
- **248: SDI positive upper limit (0x7fffffff).**
- **249: Position actual value (r9713) - SDI tolerance.**
- **250: Position actual value (r9713) + SDI tolerance.**
- **251: SDI negative lower limit (0x80000001).**
- **252: SDI stop response (p9566/p9366).**
- **253: SDI delay time (p9565/p9365).**
- **254: Setting the evaluation delay for actual value sensing after pulse enable (p9586/p9386).**
Faults and alarms
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255: Setting, behavior during pulse suppression (p9509/p9309).
256: Status image of monitoring functions SOS, SLS, SLP, test stop, SBR, SDI (result list 1 ext) (r9710).
257: Safety functions for motion monitoring functions without selection (p9512/p9312) different.
258: Fault tolerance, actual value sensing encoderless (p9585/p9385).
259: Scaling factor for safe position via PROFIsafe (p9574/p9374) different.
260: Modulo value including scaling (p9505/p9305 and p9574/p9374) for SP with 16 bit.
261: Scaling factor for acceleration for SBR different.
262: Scaling factor for the inverse value of the acceleration for SBR different.
263: Stop response for SLP2 (p9562[1]/p9362[1])
264: Position tolerance including scaling (p9542/p9342 and p9574/p9374) for SP with 16 bit.
1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.
1001: Initialization error of watchdog timer.
1002: User agreement after the timer has expired different.
The user agreement is not consistent. After a time of 2 s has elapsed, the status of the user agreement is different in both monitoring channels.
1003: Reference tolerance exceeded.
When the user agreement is set, the difference between the new reference point that has been determined after power up (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9544). In this case, the user agreement is withdrawn.
1004: Plausibility error for user agreement.
  1. If the user agreement has already been set, then setting is initiated again. In this case, the user agreement is withdrawn.
  2. The user agreement was set, although the axis has still not been referenced.
1005: - For safe motion monitoring functions without encoder: pulses already suppressed for test stop selection.
  - For safe motion monitoring functions with encoder: STO already active for test stop selection.
1011: Acceptance test status between the monitoring channels differ.
1012: Plausibility violation of the actual value from the encoder.
1020: Cyc. communication failure between the monit. cycles.
1021: Cyc. communication failure between the monit. channel and Sensor Module.
1022: Sign-of-life error for DRIVE-CLiQ encoder CU
1023: Error in the effectiveness test in the DRIVE-CLiQ encoder
1032: Sign-of-life error for DRIVE-CLiQ encoder MM
1033: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder CU
1034: Error checking offset between POS1 and POS2 for DRIVE-CLiQ encoder MM
1041: Current absolute value too low (encoderless)
1042: Current/voltage plausibility error
1043: Too many acceleration phases
1044: Actual current values plausibility error.
5000 ... 5140: PROFIsafe message values.
  For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
5000, 5014, 5023, 5024, 5030 ... 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ... 5087, 5090, 5091, 5122 ...
  5125, 5132 ... 5135, 5140: An internal software error has occurred (only for internal Siemens troubleshooting).
5012: Error when initializing the PROFIsafe driver.
5013: The result of the initialization is different for the two controllers.
5022: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.
5025: The result of the F parameterization is different for the two controllers.
5026: CRC error for the F parameters. The transferred CRC value of the F parameters does not match the value calculated in the PST.
5065: A communications error was identified when receiving the PROFIsafe telegram.
5066: A timeout error (timeout) was identified when receiving the PROFIsafe telegram.
6000 ... 6166: PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).
  For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
6000: A fatal PROFIsafe communication error has occurred.
6064 ... 6071: Error when evaluating the F parameters. The values of the transferred F parameters do not match the expected values in the PROFIsafe driver.
6064: Destination address and PROFIsafe address are different (F_Dest_Add).
Faults and alarms

6065: Destination address not valid (F_Dest_Add).
6066: Source address not valid (F_Source_Add).
6067: Watchdog time not valid (F_WD_Time).
6068: Incorrect SIL level (F_SIL).
6069: Incorrect F-CRC length (F_CRC_Length).
6070: Incorrect F parameter version (F_Par_Version).
6071: CRC error for the F parameters (CRC1). The transferred CRC value of the F parameters does not match the value calculated in the PROFIsafe driver.
6072: F parameterization is inconsistent.
6165: A communications error was identified when receiving the PROFIsafe telegram. The fault may also occur if an inconsistent or out-of-date PROFIsafe telegram has been received after switching the Control Unit off and on or after plugging in the PROFIBUS/PROFINET cable.
6166: A time monitoring error (timeout) was identified when receiving the PROFIsafe telegram.
7000: Difference of the safe position is greater than the parameterized tolerance (p9542/p9342).
7001: Scaling value for the safe position in the 16 bit notation, too low (p9574/p9374).
7002: Cycle counter for transferring the safe position is different in both monitoring channels.

See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion, diagnostics STOP F)

Remedy:
The following generally applies:
The monitoring clock cycles in both channels and the axis types should be checked for equality and the same setting applied if necessary. If the error continues to be identified, increasing the monitoring clock cycles may resolve it.

Re message value = 0:
- no error was identified in this monitoring channel. Note the error message of the other monitoring channel (for MM: C30711).

Re message value = 3:
Commissioning phase:
Encoder evaluation for own or second channel has been set incorrectly --> Correct the encoder evaluation.
In operation:
Check the mechanical design and the encoder signals.
Re message value = 4:
The monitoring clock cycles in both channels should be checked for equality and if required, set the same. In combination with fault value 5 from the other monitoring channel (with MM: C30711), the monitoring clock cycle settings must be increased.
Re message value = 232:
- increase the hysteresis tolerance (p9547/p9347). Possibly set the filtering higher (p9545/p9345).

Re message value = 1 ... 999:
- if the message value is listed under cause: Check the crosswise-compared parameters to which the message value refers.
- copy the safety parameters.
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
- correction of the encoder evaluation. The actual values differ as a result of mechanical faults (V belts, travel to a mechanical endstop, wear and window setting that is too narrow, encoder fault, ...).
Re message value = 1000:
- investigate the signal associated with the safety-relevant input (contact problems).
Re message value = 1001:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
Re message value = 1002:
- Perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 2 s).
Re message value = 1003:
- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.
- Increase the tolerance for the actual value comparison when referencing (p9544).
Then check the actual values, perform a POWER ON and set the user agreement again.
Re message value = 1004:
For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.
For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.
Faults and alarms

List of faults and alarms

Re message value = 1005:
- For safe motion monitoring functions without encoder: check the conditions for pulse enable.
- For safe motion monitoring functions with encoder: check the conditions for STO deselection.

Note:
For a power module, the test stop should always be performed for pulse enable (independent of whether with encoder or without encoder).

Re message value = 1011:
- for diagnostics, refer to parameter (r9571).

Re message value = 1012:
- upgrade the Sensor Module software.
- for 1-encoder systems, the following applies: check the encoder parameters for equality (p9515/p9315, p9519/p9319, p9523/p9323, p9524/p9324, p9525/p9325, p9529/p9329).
- For DQI encoders the following applies: If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.
- check the electrical cabinet design and cable routing for EMC compliance

Re message value = 1020, 1021:
- check the communication link.
- increase the monitoring cycle clock settings (p9500, p9511).
- carry out a POWER ON (power off/on) for all components.
- replace the hardware.

Re message value = 1033:
- If required, upgrade the firmware version of the Control Unit to a more recent version, which is released for DQI encoders.

Re message value = 1041:
- Check whether the motor has sufficient current (>r9785[0]).
- reduce the minimum current (p9588).
- for synchronous motors increase the absolute value of p9783.
- Check whether the function "Closed-loop controlled operation with HF signal injection" is activated (p1750.5 = 1) and if required, deactivate.

Re message value = 1042:
- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.
- Check the absolute current and voltage values, and set the control behavior so that this is greater than 3% of the rated converter data in operation or in the case of a fault.

Re message value = 1043:
- increase the voltage tolerance (p9589).
- increase the ramp-function generator ramp-up/down time (p1120/p1121).
- check that the current/speed control is set correctly (torque-generating/field-generating current and actual speed value may not fluctuate).
- reduce the dynamic response of the setpoint value.

Re message value = 5000, 5014, 5023, 5030, 5031, 5032, 5042, 5043, 5052, 5053, 5068, 5072, 5073, 5082 ...
- carry out a POWER ON (power off/on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

Re message value = 5012:
- check the setting of the PROFiSafe address of the Control Unit (p9610) and that of the Motor Module (p9810). It is not permissible for the PROFiSafe address to be 0 or FFFF!

Re message value = 5013, 5025:
- carry out a POWER ON (power off/on) for all components.
- check the setting of the PROFiSafe address of the Control Unit (p9610) and that of the Motor Module (p9810). It is not permissible for the PROFiSafe address to be 0 or FFFF!

Re message value = 5022:
- check the setting of the values of the F parameters at the PROFiSafe slave (F_SIL, F_CRC_Len, F_Par_Version, F_Source_Add, F_Dest_add, F_WD_Time).

Re message value = 5026:
- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFiSafe slave and update.
Re message value = 5065:
- check the configuration and communication at the PROFlsafe slave (cons. No. / CRC).
- check the setting of the value for F parameter F_WD_Time on the PROFlsafe slave and increase if necessary.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

Re message value = 5066:
- check the setting of the value for F parameter F_WD_Time on the PROFlsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFlsafe connection.

Re message value = 6000:
- carry out a POWER ON (power off/on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- increase the monitoring cycle clock settings (p9500, p9511).
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

Re message value = 6064:
- check the setting of the value in the F parameter F_Dest_Add at the PROFlsafe slave.
- check the setting of the PROFlsafe address of the Control Unit (p9610) and that of the Motor Module (p9810).

Re message value = 6065:
- check the setting of the value in the F parameter F_Dest_Add at the PROFlsafe slave. It is not permissible for the destination address to be either 0 or FFFF!

Re message value = 6066:
- check the setting of the value in the F parameter F_Source_Add at the PROFlsafe slave. It is not permissible for the source address to be either 0 or FFFF!

Re message value = 6067:
- check the setting of the value in the F parameter F_WD_Time at the PROFlsafe slave. It is not permissible for the watch time to be 0!

Re message value = 6068:
- check the setting of the value in the F parameter F_SIL at the PROFlsafe slave. The SIL level must correspond to SIL2!

Re message value = 6069:
- check the setting of the value in the F parameter F_CRC_Length at the PROFlsafe slave. The setting of the CRC2 length is 2-byte CRC in the V1 mode and 3-byte CRC in the V2 mode!

Re message value = 6070:
- check the setting of the value in the F parameter F_Par_Version at the PROFlsafe slave. The value for the F parameter version is 0 in the V1 mode and 1 in the V2 mode!

Re message value = 6071:
- check the settings of the values of the F parameters and the F parameter CRC (CRC1) calculated from these at the PROFlsafe slave and, if required, update.

Re message value = 6072:
- check the settings of the values for the F parameters and, if required, correct.
The following combinations are permissible for F parameters F_CRC_Length and F_Par_Version:

F_CRC_Length = 2-byte CRC and F_Par_Version = 0
F_CRC_Length = 3-byte CRC and F_Par_Version = 1

Re message value = 6165:
- if the fault occurs after powering up the Control Unit or after plugging in the PROFIBUS/PROFINET cable, acknowledge the fault.
- check the configuration and communication at the PROFlsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFlsafe slave and increase if necessary.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

Re message value = 6166:
- check the configuration and communication at the PROFlsafe slave.
- check the setting of the value for F parameter F_WD_Time on the PROFlsafe slave and increase if necessary.
- evaluate diagnostic information in the F host.
- check PROFlsafe connection.

Re message value = 7000:
- Increase the position tolerance (p9542/p9342).
- Determine the actual position of CU (r9713[0]) and the second channel r9713[1], and check the difference for plausibility.
- Reduce the difference of the actual position from CU (r9713[0] and the second channel r9713[1] for a 2-encoder system.
Faults and alarms

List of faults and alarms

Re message value = 7001:
- Increase the scaling value for the safe position in the 16 bit notation (p9574/p9374).
- If required, reduce the traversing range.

Re message value = 7002:
- carry out a POWER ON (power off/on) for all components.
- check whether there is a DRIVE-CLIQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.

This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel

See also: p9500 (SI Motion monitoring clock cycle (Motor Module)), p9509 (SI Motion monitoring clock cycle (Control Unit))

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<th>SI Motion CU: Defect in F-IO processing</th>
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<td>Drive object:</td>
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| Cause: | When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible. The safety message C01711 with message value 0 is also displayed due to initiation of STOP F. If at least one monitoring function is active, the safety message C01701 "SI Motion: STOP B initiated" is output after the parameterized timer has expired. Message value (%9749, interpret decimal):
Number of the cross-compared data that resulted in this message.
1: SI discrepancy monitoring time inputs (p10002, p10102).
2: SI acknowledgement internal event input terminal (p10006, p10106).
3: SI STO input terminal (p10022, p10122).
4: SI SS1 input terminal (p10023, p10123).
5: SI SS2 input terminal (p10024, p10124).
6: SI SOS input terminal (p10025, p10125).
7: SI SLS input terminal (p10026, p10126).
8: SI SLS_Limit(1) input terminal (p10027, p10127).
9: SI SLS_Limit(2) input terminal (p10028, p10128).
10: SI Safe State signal selection (p10039, p10139).
11 SI F-DI input mode (p10040, p10140).
12: SI F-DO 0 signal sources (p10042, p10142).
13: Different states for static inactive signal sources (p10006, p10022 ... p10031).
14: SI discrepancy monitoring time outputs (p10002, p10102).
15: SI acknowledgment internal event (p10006, p10106).
16: SI test sensor feedback signal test mode selected for test stop (p10046, p10146, p10047, p10147).
17: SI delay time for test stop at DOs (p10001).
18 ... 25: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of internal readback signal, generated from the selected test stop mode.
26 ... 33: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of external readback signal, generated from the selected test stop mode.
34 ... 41: SI test sensor feedback signal (p10046, p10146, p10047, p10147). Expected state of second internal readback signal, generated from the selected test stop mode.
42: Internal data for processing the second internal readback signal, generated from the selected test stop mode (p10047, p10147).
43: Internal data for processing the internal readback signal, generated from the selected test stop mode (p10047, p10147).
44: Internal data for processing the external readback signal, generated from the selected test stop mode (p10047, p10147).
45: Internal data for initialization state of test stop mode, dependent upon test stop parameters.
46: SI digital inputs debounce time (p10017, p10117)
47: Selection F-DI for PROFIsafe (p10050, p10150)
48: Screen form of the F-DIs used (p10006, p10022 ... p10031).
49: SI SDI positive input terminal (p10030, p10130).
50: SI SDI negative input terminal (p10031, p10131).
51: SI SLP input terminal (p10032, p10132). |
List of faults and alarms

52: SI SLP select input terminal (p10033, p10133).
53: Internal data for retraction logic (p10009, p100109).
54: SI F-DI for retraction SLP (p10009, p100109).

Remedy:
- check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to the second channel and then carry out an acceptance test.
- check monitoring clock cycle in p9500 and p9300 for equality.

Note:
This message can be acknowledged via F-DI or PROFIsafe.
See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

C01714  SI Motion CU: Safely-Limited Speed exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive has moved faster than that specified by the velocity limit value (p9531). The drive is stopped as a result of the configured stop response (p9563).
Message value (r9749, interpret decimal):
100: SLS1 exceeded.
200: SLS2 exceeded.
300: SLS3 exceeded.
400: SLS4 exceeded.
1000: Encoder limit frequency exceeded.
Remedy:
- check the traversing/motion program in the control.
- check the limits for "Safely-Limited Speed (SLS) and if required, adapt (p9531).
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel

Note:
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
See also: p9531 (SI Motion SLS (SG) limit values (Control Unit)), p9563 (SI Motion SLS (SG)-specific stop response (Control Unit))

C01715  SI Motion CU: Safely-Limited Position exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The axis has moved past a parameterized position that is monitored by the "SLP" function.
Message value (r9749, interpret decimal):
10: SLP1 violated.
20: SLP2 violated.
Remedy:
- check the traversing/motion program in the control.
- check the limits for "SLP" function and if required, adapt (p9534, p9535).
This message can be acknowledged as follows:
- motion monitoring functions with SINUMERIK: Via the machine control panel

Note:
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
See also: p9534 (SI Motion SLP (SE) upper limit values (Control Unit)), p9535 (SI Motion SLP (SE) lower limit values (Control Unit))
### C01716 SI Motion CU: Tolerance for safe motion direction exceeded

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9566).  
Message value (%9749, interpret decimal):  
0: Tolerance for the "safe motion direction positive" function exceeded.  
1: Tolerance for the "safe motion direction negative" function exceeded.  
**Remedy:**  
- check the traversing/motion program in the control.  
- check the tolerance for "SDI" function and if required, adapt (p9564).  
This message can be acknowledged as follows:  
- Deselect the "SDI" function and select again.  
- Perform a safe acknowledgment via F-DI or PROFIsafe.  
**Note:**  
SDI: Safe Direction (safe motion direction)  
SI: Safety Integrated  
See also: p9564 (SI Motion SDI tolerance (Control Unit)), p9565 (SI Motion SDI delay time (Control Unit)), p9566 (SI Motion SDI stop response (Control Unit))

### C01730 SI Motion CU: Reference block for dynamic safely limited speed invalid

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The reference block transferred via PROFIsafe is negative.  
A reference block is used to generate a referred velocity limit value based on the reference quantity "Velocity limit value SLS1" (p9531[0]).  
The drive is stopped as a result of the configured stop response (p9563[0]).  
Message value (%9749, interpret decimal):  
requested, invalid reference block.  
**Remedy:**  
In the PROFIsafe telegram, input data S_SLS_LIMIT_IST must be corrected.  
This message can be acknowledged as follows:  
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe  
- motion monitoring functions with SINUMERIK: Via the machine control panel  
**Note:**  
SI: Safety Integrated  
SLS: Safely-Limited Speed / SG: Safely reduced speed

### C01745 SI Motion CU: Checking braking torque for the brake test

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** POWER ON (IMMEDIATELY)  
**Cause:** The scaling of the brake torque for the brake test can be changed using parameter p2003.  
An acceptance test must be carried out again for the braking test. This determines whether the braking test is still carried out with the correct braking torque.  
**Remedy:**  
- carry out a POWER ON (power off/on) for all components.  
- repeat the acceptance test for the safe brake test if the brake test is used.  
See also: p2003 (Reference torque)
C01750  SI Motion CU: Hardware fault safety-relevant encoder
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The encoder that is used for the safety-relevant motion monitoring functions signals a hardware fault. Message value (#9749, interpret decimal):
Encoder status word 1, encoder status word 2 that resulted in the message.
Remedy:
- check the encoder connection.
- replace encoder.
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel.
Note regarding encoder replacement for a third-party motor:
The serial number of the encoder must be copied in order to acknowledge this safety message.
This can be realized using p0440 = 1 or p1990 = 1.

C01751  SI Motion CU: Effectivity test error safety-relevant encoder
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The DRIVE-CLiq encoder for safe motion monitoring signals an error for the effectivity tests. Message value (#9749, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- check the encoder connection.
- replace encoder.
This message can be acknowledged as follows:
- motion monitoring functions integrated in the drive: Via Terminal Module 54F (TM54F) or PROFIsafe
- motion monitoring functions with SINUMERIK: Via the machine control panel

C01770  SI Motion CU: Discrepancy error of the failsafe inputs or outputs
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The fail-safe digital inputs/digital outputs (F-DI/F-DO) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret bitwise binary):
yyyyxxxx bin
xxxx: Discrepancy error for fail-safe digital inputs (F-DI).
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...
yyyy: Discrepancy error for fail-safe digital outputs (F-DO).
Bit 0: Discrepancy error for F-DO 0
...
Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.
Remedy:
- check the wiring of the F-DI (contact problems).
Note:
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.
If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
Faults and alarms

List of faults and alarms

p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
p10002 >= p9500 (discrepancy time must be no less than P9500)
p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)

td = possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p9500).

tp = period for a switching operation in ms.

When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.

If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.

p10002 < p10017 + 1 ms - td
p10002 > td
p10002 >= p9500

Example:
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:
p10002 <= (110/2 ms) - 12 ms = 43 ms
Rounded-off, p10002 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).

Note:
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

A01772 SI Motion CU: Test stop failsafe inputs/outputs active
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The test stop for the fail-safe digital inputs (F-DI) and/or fail-safe digital outputs (F-DO) is presently being performed.
Note:
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output
Remedy: The alarm disappears automatically after successfully ending or canceling (when a fault condition occurs) the test stop.

F01773 SI Motion CU: Test stop error
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault has occurred on the CU side during the test stop for the fail-safe outputs.
Fault value (r0949, interpret hexadecimal):
RRRVWXYZ hex:
R: Reserved.
V: Actual state of the DO channel concerned (see X) on the CU (corresponds to the states read back from the hardware, bit 0 = DO 0, bit 1 = DO 1, etc.).
W: Required state of the DO channel concerned (see X, bit 0 = DO 0, bit 1 = DO 1, etc.).
X: DO channels involved, which indicate an error (bit 0 = DO 0, bit 1 = DO 1, etc.).
Y: Reason for the test stop fault.
Z: State of the test stop in which the fault has occurred.
Y: Reason for the test stop fault
Y = 1: MM side in incorrect test stop state (internal fault).
Y = 2: Expected states of the DOs were not fulfilled (CU305: readback via DI 22 / CU240 readback DI 2).
Y = 3: Incorrect timer state on CU side (internal fault)
Y = 4: Expected states of the diag DOs were not fulfilled (CU305: internal readback on MM channel).
Y = 5: Expected states of the second diag DOs were not fulfilled (CU305: internal readback on CU channel).
X and Y indicate the DI or Diag-DO state dependent upon the reason for the fault (2, 4 or 5).
In the event of multiple test stop faults, the first one that occurred is shown.
Z: Test stop state and associated test actions
Z = 0...3: Synchronization phase of test stop between CU and Motor Module no switching operations
Z = 4: DO + OFF and DO - OFF
Z = 5: Check to see if states are as expected
Z = 6: DO + ON and DO - OFF
Z = 7: Check to see if states are as expected
Z = 8: DO + OFF and DO - ON
Z = 9: Check to see if states are as expected
Z = 10: DO + ON and DO - OFF
Z = 11: Check to see if states are as expected
Z = 12: DO + OFF and DO - OFF
Z = 13: Check to see if states are as expected
Z = 14: End of test stop

Diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: 0/-/-/1
7: 0/-/-/0
9: 0/-/-/0
11: 1/-/-/1
13: 0/-/-/1

Second diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/-/-/1
7: -/-/-/0
9: -/-/-/1
11: -/-/-/0
13: -/-/-/1

DI expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/1/1/-
7: -/0/0/-
9: -/0/1/-
11: -/1/1/-
13: -/1/1/-

Example:
Fault F01773 (CU) is signaled with fault value = 0001_0127 and fault F30773 (MM) is signaled with fault value 0000_0127.
This means that in state 7 (Z = 7) the state of the external readback signal was not set correctly (Y = 2) after DO-0 (X = 1) was switched to ON/ON.
Fault value 0001_0127 indicates that 0 was expected (W = 0) and 1 (V = 1) was read back from the hardware.
Fault value 0000_0127 on the MM indicates that the states were as expected.
In the case of fault F30773, W and V are always identical; a value of 0 always means that 0 was expected at the readback input but was not present on the other channel (CU).

Remedy:
Check the wiring of the F-DOs and restart the test stop.

Note:
The fault is withdrawn if the test stop is successfully completed.
In the event of multiple test stop faults, the first one that occurred is shown.
Once the test stop has been restarted the next queued test stop fault will be signaled (if there is one).

A01774  SI Motion CU: Test stop necessary
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
- after powering up the drive, a test stop has still not been carried out.
- a new test stop is required after commissioning.
- the time to carry out the forced checking procedure (test stop) has expired (p10003).
Note:
- The test must be performed within a defined, maximum time interval (p10003, maximum of 8760 hours) in order to comply with the requirements as laid down in the standards for timely fault detection and the conditions to calculate the failure rates of safety functions (PFH value). Operation beyond this maximum time period is permissible if it can be ensured that the forced checking procedure is performed before persons enter the hazardous area and who are depending on the safety functions correctly functioning.
Remedy:
Initiate test stop (BI: p10007).
### Faults and alarms

#### List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01795</td>
<td>SI Motion CU: Wait time after exiting the safe pulse cancellation expired</td>
<td>-</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>After exiting safe pulse cancellation, within the wait time of 5 seconds, encoderless actual value sensing was not able to be activated for the extended functions without selection. A change is again made into the &quot;safe pulse cancellation&quot; state.</td>
<td>- Check missing enable signals, which prevent the drive control from being commissioned (r0046). - Evaluate possible fault messages of the encoderless actual value sensing and remove.</td>
</tr>
<tr>
<td>A01796 (F, N)</td>
<td>SI CU: Wait for communication</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The drive waits for communication to be established to execute the safety-relevant motion monitoring functions. Note: In this state, the pulses are safely suppressed. Alarm value (r2124, interpret decimal): 1: Wait for communication to be established to SINUMERIK. 2: Wait for communication to be established to TM54F. 3: Wait for communication to be established to PROFIsafe F-Host.</td>
<td>If, after a longer period of time, the message is not automatically withdrawn, the following checks have to be made as appropriate: For communication with SINUMERIK, the following applies: - check any other PROFIBUS messages/signals present and remove their cause. - check that assignment of the axes on the higher-level control to the drives in the drive unit is correct. - check enable signal of the safety-relevant motion monitoring functions for the corresponding axis on the higher-level control and if required, set it. For communication with TM54F, the following applies: - check any other messages/signals present for DRIVE-CLiQ communication with the TM54F and remove their cause. - check the setting of p10010. All the drive objects controlled by the TM54F must be listed. For communication with PROFIsafe F-Host, the following applies: - check any other PROFIsafe communication messages/signals present and evaluate them. - check the operating state of the F-Host. - check the communication connection to the F Host. - check the communication connection to the Motor Module. It must be ensured that when the Control Unit powers up, the Motor Module is connected and at the latest is also switched-on with the Control Unit. Otherwise, if the Motor Module is subsequently inserted or switched-on, a power on must be performed at the Control Unit. See also: p9601 (SI enable, functions integrated in the drive (Control Unit)), p9801 (SI enable, functions integrated in the drive (Motor Module)), p10010 (SI drive object assignment)</td>
</tr>
<tr>
<td>C01797</td>
<td>SI Motion CU: Axis not safely referenced</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The standstill position saved before powering down does not match the actual position determined at power-up. Message value (r9749, interpret decimal): 1: Axis not referenced. 2: User agreement missing.</td>
<td></td>
</tr>
</tbody>
</table>

---

**A01795**

- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** After exiting safe pulse cancellation, within the wait time of 5 seconds, encoderless actual value sensing was not able to be activated for the extended functions without selection. A change is again made into the "safe pulse cancellation" state.
- **Remedy:**
  - Check missing enable signals, which prevent the drive control from being commissioned (r0046).
  - Evaluate possible fault messages of the encoderless actual value sensing and remove.

**A01796 (F, N)**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The drive waits for communication to be established to execute the safety-relevant motion monitoring functions. Note: In this state, the pulses are safely suppressed. Alarm value (r2124, interpret decimal):
  - 1: Wait for communication to be established to SINUMERIK.
  - 2: Wait for communication to be established to TM54F.
  - 3: Wait for communication to be established to PROFIsafe F-Host.
- **Remedy:** If, after a longer period of time, the message is not automatically withdrawn, the following checks have to be made as appropriate:
  - For communication with SINUMERIK, the following applies:
    - check any other PROFIBUS messages/signals present and remove their cause.
    - check that assignment of the axes on the higher-level control to the drives in the drive unit is correct.
    - check enable signal of the safety-relevant motion monitoring functions for the corresponding axis on the higher-level control and if required, set it.
  - For communication with TM54F, the following applies:
    - check any other messages/signals present for DRIVE-CLiQ communication with the TM54F and remove their cause.
    - check the setting of p10010. All the drive objects controlled by the TM54F must be listed.
  - For communication with PROFIsafe F-Host, the following applies:
    - check any other PROFIsafe communication messages/signals present and evaluate them.
    - check the operating state of the F-Host.
    - check the communication connection to the F Host.
    - check the communication connection to the Motor Module. It must be ensured that when the Control Unit powers up, the Motor Module is connected and at the latest is also switched-on with the Control Unit. Otherwise, if the Motor Module is subsequently inserted or switched-on, a power on must be performed at the Control Unit.
    - See also: p9601 (SI enable, functions integrated in the drive (Control Unit)), p9801 (SI enable, functions integrated in the drive (Motor Module)), p10010 (SI drive object assignment)

**C01797**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** The standstill position saved before powering down does not match the actual position determined at power-up. Message value (r9749, interpret decimal):
  - 1: Axis not referenced.
  - 2: User agreement missing.
Remedy: If safe automatic referencing is not possible the user must issue a user agreement for the new position using the softkey. This means that this position is then designated as safety-relevant.

Note:
SI: Safety Integrated

C01798 SI Motion CU: Test stop running

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The test stop is active.
Remedy: Not necessary.
The message is withdrawn when the test stop is finished.
Note:
SI: Safety Integrated

C01799 SI Motion CU: Acceptance test mode active

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The acceptance test mode is active. The POWER ON signals of the safety-relevant motion monitoring functions can be acknowledged during the acceptance test using the RESET button of the higher-level control.
Remedy: Not necessary.
The message is withdrawn when exiting the acceptance test mode.
Note:
SI: Safety Integrated

F01800 DRIVE-CLiQ: Hardware/configuration error

Message value: %1
Drive object: All objects
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A DRIVE-CLiQ connection fault has occurred.
Fault value (r0949, interpret decimal):
100 ... 107:
Communication via DRIVE-CLiQ socket X100 ... X107 has not been switched to cyclic operation. The cause may be an incorrect structure or a configuration that results in an impossible bus timing.
10:
Loss of the DRIVE-CLiQ connection. The cause may be, for example, that the DRIVE-CLiQ cable was withdrawn from the Control Unit or as a result of a short-circuit for motors with DRIVE-CLiQ. This fault can only be acknowledged in cyclic communication.
11:
Repeated faults when detecting the connection. This fault can only be acknowledged in cyclic communication.
12:
A connection was detected but the node ID exchange mechanism does not function. The reason is probably that the component is defective. This fault can only be acknowledged in cyclic communication.
Remedy:
Re fault value = 100 ... 107:
- ensure that the DRIVE-CLiQ components have the same firmware versions.
- avoid longer topologies for short current controller clock cycles.
For fault value = 10:
- check the DRIVE-CLiQ cables at the Control Unit.
- remove any short-circuit for motors with DRIVE-CLiQ.
- carry out a POWER ON.
For fault value = 11:
- check the electrical cabinet design and cable routing for EMC compliance.
For fault value = 12:
- replace the component involved.
### A01840 SMI: Component found without motor data

**Message value:** Component number: %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An SMI/DQI without motor data has been found (e.g. SMI installed as replacement part).  
Alarm value (r2124, interpret decimal):  
Component number from target topology.  
**Remedy:**  
1. Download the SMI/DQI data (motor/encoder data) from the data backup again (p4690, p4691).  
2. Carry out a POWER ON (power off/on) for this component.  
**Note:**  
DQI: DRIVE-CLiQ Sensor Integrated  
SMI: SINAMICS Sensor Module Integrated  
See also: p4690 (SMI spare part component number), p4691 (SMI spare part save/download data)

### A01900 (F) PB/PN: Configuration telegram error

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** A controller attempts to establish a connection using an incorrect configuring telegram.  
Alarm value (r2124, interpret decimal):  
1: Connection established to more drive objects than configured in the device. The drive objects for process data exchange and their sequence are defined in p0978.  
2: Too many PZD data words for output or input to a drive object. The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051.  
3: Uneven number of bytes for input or output.  
4: Setting data for synchronization not accepted. For more information, see A01902.  
211: Unknown parameterizing block.  
223: Clock synchronization for the PZD interface set in p8815[0] is not permissible. More than one PZD interface is operated in clock synchronism.  
253: PN Shared Device: Illegal mixed configuration of PROFINet and PZD.  
254: PN Shared Device: Illegal double assignment of a slot/subslot.  
255: PN: Configured drive object and existing drive object do not match.  
500: Illegal PROFINet configuration for the interface set in p8815[1]. More than one PZD interface is operated with PROFINet.  
501: PROFINet parameter error (e.g. F_dest).  
502: PROFINet telegram does not match.  
503: PROFINet connection is rejected as long as there is no isochronous connection (p8969).  
**Additional values:**  
Only for internal Siemens troubleshooting.  
**Remedy:** Check the bus configuration on the master and the slave sides.  
Re alarm value = 1, 2:  
- Check the list of the drive objects with process data exchange (p0978).  
**Note:**  
With p0978[x] = 0, all of the following drive objects in the list are excluded from the process data exchange.
Re alarm value = 2:
- Check the number of data words for output and input to a drive object.
Re alarm value = 211:
- Ensure offline version <= online version.
Re alarm value = 223, 500:
- Check the setting in p8839 and p8815.
- Check for inserted but not configured CBE20.
- Ensure that only one PZD interface is operated in clock synchronism or with PROFlsafe.
Re alarm value = 255:
- Check configured drive objects.
Re alarm value = 501:
- Check the set PROFlsafe address (p9610).
Re alarm value = 502:
- Check the set PROFlsafe telegram (p60022, p9611).

Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01902  PB/PN clock cycle synchronous operation parameterization not permissible
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:
Parameterization for isochronous operation is not permissible.
Alarm value (r2124, interpret decimal):
0: Bus cycle time Tdp < 0.5 ms.
1: Bus cycle time Tdp > 32 ms.
2: Bus cycle time Tdp is not an integer multiple of the current controller clock cycle.
3: Instant of the actual value sensing Ti > Bus cycle time Tdp or Ti = 0.
4: Instant of the actual value sensing Ti is not an integer multiple of the current controller clock cycle.
5: Instant of the setpoint acceptance To >= Bus cycle time Tdp or To = 0.
6: Instant of the setpoint acceptance To is not an integer multiple of the current controller clock cycle.
7: Master application cycle time Tmapc is not an integer multiple of the speed controller clock cycle.
8: Bus reserve bus cycle time Tdp - data exchange time Tdx less than two current controller clock cycles.
10: Instant of the setpoint acceptance To <= data exchange time Tdx + current controller clock cycle
11: Master application cycle time Tmapc > 14 x Tdp or Tmapc = 0.
12: PLL tolerance window Tpll_w > Tpll_w_max.
13: Bus cycle time Tdp is not a multiple of all basic clock cycles p0110[x].
16: For COMM BOARD, the instant in time for the actual value sensing Ti is less than two current controller clock cycles.
Remedy:
- Adapt the bus parameterization Tdp, Ti, To.
- adapt the current and speed controller clock cycle.
Re alarm value = 10:
- Reduce Tdx by using fewer bus participants or shorter telegrams.
Note:
PB: PROFIBUS
PN: PROFINET

F01910 (N, A)  Fieldbus: setpoint timeout
Message value:  -
Drive object:  All objects
Reaction:  Infeed: OFF2 (NONE, OFF1)
Vector: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:
The reception of setpoints from the fieldbus interface (onboard, PROFIBUS/PROFINET/USS) has been interrupted.
- bus connection interrupted.
- controller switched off.
- controller set into the STOP state.
See also: p2047 (PROFIBUS additional monitoring time)
List of faults and alarms

F01911 (N, A) PB/PN clock cycle synchronous operation clock cycle failure

Message value: -
Drive object: All objects
Reaction: Infeed: OFF1
Vector: OFF1 (OFF3)
Acknowledge: IMMEDIATELY

Causes:
The global control telegram to synchronize the clock cycles has failed - in cyclic operation - for several DP clock cycles or has violated the time grid specified in the parameterizing telegram over several consecutive DP clock cycles (refer to the bus cycle time, Tdp and Tpllw).

Remedy:
- check the physical bus configuration (cable, connector, terminating resistor, shielding, etc.).
- check whether communication was briefly or permanently interrupted.
- check the bus and controller for utilization level (e.g. bus cycle time Tdp was set too short).

Note:
PB: PROFIBUS
PN: PROFINET

Remedy upon N: NONE
Acknowledge upon N: NONE
Remedy upon A: NONE
Acknowledge upon A: NONE

F01912 (N, A) PB/PN clock cycle synchronous operation sign-of-life failure

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF1
Vector: OFF1 (OFF3)
Acknowledge: IMMEDIATELY

Causes:
The maximum permissible number of errors in the controller sign-of-life (clock synchronous operation) has been exceeded in cyclic operation.

Remedy:
- physically check the bus (cables, connectors, terminating resistor, shielding, etc.).
- correct the interconnection of the controller sign-of-life (p2045).
- check whether the controller correctly sends the sign-of-life (e.g. create a trace with STW2.12 ... STW2.15 and trigger signal ZSW1.3).
- check the permissible telegram failure rate (p0925).
- check the bus and controller for utilization level (e.g. bus cycle time Tdp was set too short).

Note:
PB: PROFIBUS
PN: PROFINET

Remedy upon N: NONE
Acknowledge upon N: NONE
Remedy upon A: NONE
Acknowledge upon A: NONE

A01920 (F) PROFIBUS: Interruption cyclic connection

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Causes:
The cyclic connection to the PROFIBUS master is interrupted.

Remedy:
Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode.
Faults and alarms

List of faults and alarms

Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY

A01921 (F) PROFIBUS: Receive setpoints after To
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: Output data of PROFIBUS master (setpoints) received at the incorrect instant in time within the PROFIBUS clock cycle.
Remedy: 
- check bus configuration.
- check parameters for clock cycle synchronization (ensure To > Tdx).
Note:
To: Time of setpoint acceptance
Tdx: Data exchange time

A01930 PB/PN current controller clock cycle clock cycle synch. not equal
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The current controller clock cycle of all drives must be set the same for the clock cycle synchronous operation.
Alarm value (r2124, interpret decimal):
Number of the drive object with different current controller clock cycle.
Remedy: 
Set current controller clock cycles to identical values (p0115[0]).
Note:
PBM: PROFIBUS
PN: PROFINET
See also: p0115

A01931 PB/PN speed controller clock cycle clock cycle synch. not equal
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The speed controller clock cycle of all drives must be set the same for the clock cycle synchronous operation.
Alarm value (r2124, interpret decimal):
Number of the drive object with different speed controller clock cycle.
Remedy: 
Set the speed controller clock cycles the same (p0115[1]).
Note:
PBM: PROFIBUS
PN: PROFINET
See also: p0115

A01932 PB/PN clock cycle synchronization missing for DSC
Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: There is no clock synchronization or clock synchronous sign of life and DSC is selected.
Note:
DSC: Dynamic Servo Control
See also: p0922 (IF1 PROFIdrive telegram selection)
Remedy: 
Set clock synchronization across the bus configuration and transfer clock synchronous sign-of-life.
See also: r2064 (PB/PN diagnostics clock cycle synchronism)
### A01940 PB/PN clock cycle synchronism not reached

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. It was not possible to synchronize to the clock cycle specified by the master.  
- the master does not send a clock synchronous global control telegram although clock synchronous operation was selected when configuring the bus.  
- the master is using another clock synchronous DP clock cycle than was transferred to the slave in the parameterizing telegram.  
- at least one drive object has a pulse enable (not controlled from PROFIBUS/PROFINET either).  
**Remedy:**  
- check the master application and bus configuration.  
- check the consistency between the clock cycle input when configuring the slave and clock cycle setting at the master.  
- check that no drive object has a pulse enable. Only enable the pulses after synchronizing the PROFIBUS/PROFINET drives.  
**Note:**  
PB: PROFIBUS  
PN: PROFINET

### A01941 PB/PN clock cycle signal missing when establishing bus communication

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. The global control telegram for synchronization is not being received.  
**Remedy:** Check the master application and bus configuration.  
**Note:**  
PB: PROFIBUS  
PN: PROFINET

### A01943 PB/PN clock cycle signal error when establishing bus communication

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram. The global control telegram for synchronization is being irregularly received.  
- the master is sending an irregular global control telegram.  
- the master is using another clock synchronous DP clock cycle than was transferred to the slave in the parameterizing telegram.  
**Remedy:**  
- check the master application and bus configuration.  
- check the consistency between the clock cycle input when configuring the slave and clock cycle setting at the master.  
**Note:**  
PB: PROFIBUS  
PN: PROFINET

### A01944 PB/PN sign-of-life synchronism not reached

**Message value:** -  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The bus is in the data exchange state and clock synchronous operation has been selected using the parameterizing telegram.
Synchronization with the master sign-of-life (STW2.12 ... STW2.15) could not be completed because the sign-of-life is changing differently to how it was configured in the Tmapc time grid.

**Remedy:**
- ensure that the master correctly increments the sign-of-life in the master application clock cycle Tmapc.
- correct the interconnection of the master sign-of-life (p2045).

**Note:**
PB: PROFIBUS
PN: PROFINET

---

**A01945**

**PROFIBUS: Connection to the Publisher failed**

**Message value:** Fault cause: %1 bin

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** For PROFIBUS peer-to-peer data transfer, the connection to at least one Publisher has failed.
Alarm value (r2124, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection failed.
...
Bit 15 = 1: Publisher with address in r2077[15], connection failed.

**Remedy:**
- check the PROFIBUS cables.
- carry out a first commissioning of the Publisher that has the failed connection.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

---

**F01946 (A)**

**PROFIBUS: Connection to the Publisher aborted**

**Message value:** Fault cause: %1 bin

**Drive object:** All objects

**Reaction:** Infeed: OFF1 (NONE, OFF2), Vector: OFF1 (NONE, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** At this drive object, the connection to at least one Publisher for PROFIBUS peer-to-peer data transfer in cyclic operation has been aborted.
Fault value (r0949, interpret binary):
Bit 0 = 1: Publisher with address in r2077[0], connection aborted.
...
Bit 15 = 1: Publisher with address in r2077[15], connection aborted.

**Remedy:**
- check the PROFIBUS cables.
- check the state of the Publisher that has the aborted connection.
See also: r2077 (PROFIBUS diagnostics peer-to-peer data transfer addresses)

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

---

**F01950 (N, A)**

**PB/PN clock cycle synchronous operation synchronization unsuccessful**

**Message value:** -

**Drive object:** All objects

**Reaction:** OFF1 (NONE)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** Synchronization of the internal clock cycle to the global control telegram has failed. The internal clock cycle exhibits an unexpected shift.

**Remedy:** Only for internal Siemens troubleshooting.

**Note:**
PB: PROFIBUS
PN: PROFINET

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01951</td>
<td>CU DRIVE-CLiQ: Synchronization application clock cycle missing</td>
<td>%1</td>
<td>All objects</td>
<td>OFF2 (NONE)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>If DRIVE-CLiQ components with different application clock cycle are operated on a DRIVE-CLiQ port, this requires synchronization with the Control Unit. This synchronization routine was unsuccessful. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- carry out a POWER ON (power off/on) for all components. - upgrade the software of the DRIVE-CLiQ components. - upgrade the Control Unit software. Note: If a Controller Extension is being used (e.g. CX32, NX10), then the following applies: Check whether the Controller Extension is issuing error messages, and if required, remove these.</td>
</tr>
<tr>
<td>F01952</td>
<td>CU DRIVE-CLiQ: Synchronization of component not supported</td>
<td>%1</td>
<td>All objects</td>
<td>OFF2 (NONE)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The existing system configuration requires that the connected DRIVE-CLiQ components support the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and the application clock cycle. However, not all DRIVE-CLiQ components have this functionality. Fault value (r0949, interpret decimal): Component number of the first faulty DRIVE-CLiQ component.</td>
<td></td>
</tr>
<tr>
<td>A01953</td>
<td>CU DRIVE-CLiQ: Synchronization not completed</td>
<td>%1</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>After the drive system is powered up, the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started but was not completed within the selected time tolerance. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td></td>
</tr>
<tr>
<td>F01954</td>
<td>CU DRIVE-CLiQ: Synchronization unsuccessful</td>
<td>%1</td>
<td>All objects</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>Synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started and was not able to be successfully completed (e.g. after switch-on). Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1. Remove the cause of a possible DRIVE-CLiQ fault. 2. Initiate a new synchronization, e.g. as follows: - remove the PROFIBUS master and re-insert again. - restart the PROFIBUS master. - switch-off the Control Unit and switch-on again.</td>
<td></td>
</tr>
</tbody>
</table>
- carry out a Control Unit hardware reset (RESET button, p0972).
- carry out a parameter reset and download the saved parameters (p0009 = 30, p0976 = 2, 3).

**A01955 CU DRIVE-CLiQ: Synchronization DO not completed**

Message value: %1

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: After the drive system is powered up, the synchronization between the basic clock cycle, DRIVE-CLiQ clock cycle and application clock cycle was started but was not completed within the selected time tolerance.

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

Remedy: Carry out a POWER ON (power off/on) for all components of the DO.

**A01980 PN: Interruption cyclic connection**

Message value: %1

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic connection to a PROFINET controller is interrupted.

Alarm value (r2124, interpret decimal):

Number of the interrupted connection.

Remedy: Establish the PROFINET connection and activate the PROFINET controller in the cyclic mode.

**A01981 PN: Maximum number of controllers exceeded**

Message value: Info. 1: %1, info. 2: %2

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: A controller attempts to establish a connection to the drive, and as a consequence exceeds the permitted number of PROFINET connections.

The alarm disappears automatically after approx. 30 seconds.

Alarm value (r2124, interpret hexadecimal):

yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2

Info 1 = 0: number of RT connections exceeded

Info 1 > 0: number of IRT connections exceeded

Info 2: permitted number of connections

Remedy: Check the configuration of the PROFINET controllers as well as the p8929 setting.

See also: p8929 (PN remote controller number)

**A01982 PROFINET: Second controller missing**

Message value: -

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The PROFINET function "Shared Device" has been activated (p8929 = 2). However, only the connection to a PROFINET controller is present.

Remedy: Check the configuration of the PROFINET controllers as well as the p8929 setting.

See also: p8929 (PN remote controller number)

**A01989 PROFINET: Internal cyclic data transfer error**

Message value: %1

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: The cyclic actual values and/or setpoints were not transferred within the specified times.
### Faults and alarms

#### List of faults and alarms

- **A01990 (F)**  
  **USS: PZD configuration error**
  - **Message value:** %1  
  - **Drive object:** All objects  
  - **Reaction:** NONE  
  - **Acknowledge:** NONE  
  - **Cause:** The configuration of the process data (PZD) for the USS protocol is incorrect.  
  - **Remedy:** Re-alarm value = 2: Check the amount of USS PZD (p2022) and the maximum PZD amount (r2050/p2051) for the first drive object (p0978[0]).
  - **Reaction upon F:** NONE (OFF1)  
  - **Acknowl. upon F:** IMMEDIATELY

- **A02000**  
  **Function generator: Start not possible**
  - **Message value:** -  
  - **Drive object:** All objects  
  - **Reaction:** NONE  
  - **Acknowledge:** NONE  
  - **Cause:** The function generator has already been started.  
  - **Remedy:** Stop the function generator and restart again if necessary.  
    - **Note:** The alarm is reset as follows:  
    - remove the cause of this alarm.  
    - restart the function generator.  
    - See also: p4800 (Function generator control)

- **A02005**  
  **Function generator: Drive does not exist**
  - **Message value:** %1  
  - **Drive object:** All objects  
  - **Reaction:** NONE  
  - **Acknowledge:** NONE  
  - **Cause:** The drive object specified for connection does not exist.  
    - See also: p4815 (Function generator drive number)  
  - **Remedy:** Use the existing drive object with the corresponding number.  
    - **Note:** The alarm is reset as follows:  
    - remove the cause of this alarm.  
    - restart the function generator.  
    - See also: p4815 (Function generator drive number)

- **A02006**  
  **Function generator: No drive specified for connection**
  - **Message value:** -  
  - **Drive object:** All objects  
  - **Reaction:** NONE  
  - **Acknowledge:** NONE  
  - **Cause:** No drive specified for connection in p4815.  
    - See also: p4815 (Function generator drive number)
List of faults and alarms

Remedy: At least one drive to be connected must be specified in p4815.

Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4815 (Function generator drive number)

<table>
<thead>
<tr>
<th>A02007</th>
<th>Function generator: Drive not SERVO / VECTOR / DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value: %1</td>
<td></td>
</tr>
<tr>
<td>Drive object: All objects</td>
<td></td>
</tr>
<tr>
<td>Reaction: NONE</td>
<td></td>
</tr>
<tr>
<td>Acknowledge: NONE</td>
<td></td>
</tr>
<tr>
<td>Cause: The drive object specified for connection is not a SERVO / VECTOR or DC_CTRL. See also: p4815 (Function generator drive number)</td>
<td></td>
</tr>
</tbody>
</table>
| Remedy: Use a SERVO / VECTOR / DC_CTRL drive object with the corresponding number. Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator. |

<table>
<thead>
<tr>
<th>A02008</th>
<th>Function generator: Drive specified a multiple number of times</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value: %1</td>
<td></td>
</tr>
<tr>
<td>Drive object: All objects</td>
<td></td>
</tr>
<tr>
<td>Reaction: NONE</td>
<td></td>
</tr>
<tr>
<td>Acknowledge: NONE</td>
<td></td>
</tr>
</tbody>
</table>
| Cause: The drive object specified for connection is already specified. Alarm value (r2124, interpret decimal):
Drive object number of the drive object that is specified a multiple number of times. |
| Remedy: Specify a different drive object. Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator. |

<table>
<thead>
<tr>
<th>A02009</th>
<th>Function generator: Illegal mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value: %1</td>
<td></td>
</tr>
<tr>
<td>Drive object: All objects</td>
<td></td>
</tr>
<tr>
<td>Reaction: NONE</td>
<td></td>
</tr>
<tr>
<td>Acknowledge: NONE</td>
<td></td>
</tr>
</tbody>
</table>
| Cause: The set operating mode (p1300) of the drive object is not permissible when using the function generator. Alarm value (r2124, interpret decimal):
Number of the drive object involved. |
| Remedy: Change the operating mode for this drive object to p1300 = 20 (encoderless speed control) or p1300 = 21 (speed control with encoder). Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator. |

<table>
<thead>
<tr>
<th>A02010</th>
<th>Function generator: Speed setpoint from the drive is not zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value: -</td>
<td></td>
</tr>
<tr>
<td>Drive object: All objects</td>
<td></td>
</tr>
<tr>
<td>Reaction: NONE</td>
<td></td>
</tr>
<tr>
<td>Acknowledge: NONE</td>
<td></td>
</tr>
<tr>
<td>Cause: The speed setpoint of a drive selected for connection is greater than the value for the standstill detection set using p1226.</td>
<td></td>
</tr>
</tbody>
</table>
Remedy: For all of the drives specified for connection, set the speed setpoints to zero.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02011  Function generator: The actual drive speed is not zero
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The speed actual value of a drive selected for connection is greater than the value for the standstill detection set using p1226.
Remedy: Set the relevant drives to zero speed before starting the function generator.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02015  Function generator: Drive enable signals missing
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The master control and/or enable signals are missing to connect to the specified drive.
See also: p4815 (Function generator drive number)
Remedy: Fetch the master control to the specified drive object and set all enable signals.
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02016  Function generator: Magnetizing running
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: Magnetizing has not yet been completed on a drive object specified for connection.
Alarm value (r2124, interpret decimal):
Number of the drive object involved.
See also: p4815 (Function generator drive number)
Remedy: Wait for magnetizing of the motor (r0056.4).
Note:
The alarm is reset as follows:
- restart the function generator.
See also: r0056 (Status word, closed-loop control)

A02020  Function generator: Parameter cannot be changed
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: This parameter setting cannot be changed when the function generator is active (p4800 = 1).
See also: p4810, p4812, p4813, p4815, p4820, p4821, p4822, p4823, p4824, p4825, p4826, p4827, p4828, p4829
Remedy:  
- stop the function generator before parameterizing (p4800 = 0).
- if required, start the function generator (p4800 = 1).
Note:
The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4800 (Function generator control)

### A02025 Function generator: Period too short

- **Message value:**
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The value for the period is too short.
  See also: p4821 (Function generator period)
- **Remedy:** Check and adapt the value for the period.
  Note:
The alarm is reset as follows:
  - remove the cause of this alarm.
  - restart the function generator.
  See also: p4821 (Function generator period)

### A02026 Function generator: Pulse width too high

- **Message value:**
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The selected pulse width is too high.
The pulse width must be less than the period duration.
See also: p4822 (Function generator pulse width)
- **Remedy:** Reduce pulse width.
  Note:
The alarm is reset as follows:
  - remove the cause of this alarm.
  - restart the function generator.
  See also: p4821 (Function generator period), p4822 (Function generator pulse width)

### A02030 Function generator: Physical address equals zero

- **Message value:**
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The specified physical address is zero.
  See also: p4812 (Function generator physical address)
- **Remedy:** Set a physical address with a value other than zero.
  Note:
The alarm is reset as follows:
  - remove the cause of this alarm.
  - restart the function generator.
  See also: p4812 (Function generator physical address)

### A02040 Function generator: Illegal value for offset

- **Message value:**
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The value for the offset is higher than the value for the upper limit or lower than the value for the lower limit.
  See also: p4826 (Function generator offset)
Faults and alarms
List of faults and alarms

Remedy: Adjust the offset value accordingly.
Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: p4826 (Function generator offset), p4828 (Function generator upper limit), p4829 (Function generator lower limit)

A02041 Function generator: Illegal value for bandwidth
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The bandwidth referred to the time slice clock cycle of the function generator has either been set too low or too high.
Depending on the time slice clock cycle, the bandwidth is defined as follows:
Bandwidth_{max} = 1 / (2 \times \text{time slice clock cycle})
Bandwidth_{min} = Bandwidth_{max} / 100000
Example:
Assumption: p4830 = 125 \mu s
\rightarrow Bandwidth_{max} = 1 / (2 \times 125 \mu s) = 4000 \text{ Hz}
\rightarrow Bandwidth_{min} = 4000 \text{ Hz} / 100000 = 0.04 \text{ Hz}
Note:
p4823: Function generator bandwidth
p4830: Function generator time slice clock cycle
See also: p4823 (Function generator bandwidth), p4830 (Function generator time slice cycle)
Remedy: Check the value for the bandwidth and adapt accordingly.
Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.

A02047 Function generator: Time slice clock cycle invalid
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The time slice clock cycle selected does not match any of the existing time slices.
See also: p4830 (Function generator time slice cycle)
Remedy: Enter an existing time slice clock cycle. The existing time slices can be read out via p7901.
Note: The alarm is reset as follows:
- remove the cause of this alarm.
- restart the function generator.
See also: r7901 (Sampling times)

A02050 Trace: Start not possible
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The trace has already been started.
See also: p4700 (Trace control)
Remedy: Stop the trace and, if necessary, start again.
### A02055 Trace: Recording time too short

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The trace duration is too short. The minimum is twice the value of the trace clock cycle. See also: p4721 (Trace recording time)
- **Remedy:** Check the selected recording time and, if necessary, adjust.

### A02056 Trace: Recording cycle too short

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The selected recording cycle is shorter than the selected basic clock cycle 0 (p0110[0]). See also: p4720 (Trace recording cycle)
- **Remedy:** Increase the value for the trace cycle.

### A02057 Trace: Time slice clock cycle invalid

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The time slice clock cycle selected does not match any of the existing time slices. See also: p4723 (Trace time slice cycle)
- **Remedy:** Enter an existing time slice clock cycle. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)

### A02058 Trace: Time slice clock cycle for endless trace not valid

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The selected time slice clock cycle cannot be used for the endless trace. See also: p4723 (Trace time slice cycle)
- **Remedy:** Enter the clock cycle of an existing time slice with a cycle time >= 2 ms for up to 4 recording channels or >= 4 ms from 5 recording channels per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)

### A02059 Trace: Time slice clock cycle for 2 x 8 recording channels not valid

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The selected time slice clock cycle cannot be used for more than 4 recording channels. See also: p4723 (Trace time slice cycle)
- **Remedy:** Enter the clock cycle of an existing time slice with a cycle time >= 4 ms or reduce the number of recording channels to 4 per trace. The existing time slices can be read out via p7901. See also: r7901 (Sampling times)
### A02060 Trace: Signal to be traced missing

| Message value: | - |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | - a signal to be traced was not specified.  
- the specified signals are not valid.  
See also: p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3) |
| Remedy: | - specify the signal to be traced.  
- check whether the relevant signal can be traced. |

### A02061 Trace: Invalid signal

| Message value: | - |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | - the specified signal does not exist.  
- the specified signal can no longer be traced (recorded).  
See also: p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3) |
| Remedy: | - specify the signal to be traced.  
- check whether the relevant signal can be traced. |

### A02062 Trace: Invalid trigger signal

| Message value: | - |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | - a trigger signal was not specified.  
- the specified signal does not exist.  
- the specified signal is not a fixed-point signal.  
- the specified signal cannot be used as a trigger signal for the trace.  
See also: p4711 (Trace trigger signal) |
| Remedy: | Specify a valid trigger signal. |

### A02063 Trace: Invalid data type

| Message value: | %1 |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The specified data type to select a signal using a physical address is invalid.  
See also: p4711 (Trace trigger signal), p4730 (Trace record signal 0), p4731 (Trace record signal 1), p4732 (Trace record signal 2), p4733 (Trace record signal 3) |
| Remedy: | Use a valid data type. |

### A02070 Trace: Parameter cannot be changed

| Message value: | - |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The trace parameter settings cannot be changed when the trace is active.  
See also: p4700, p4710, p4711, p4712, p4713, p4714, p4715, p4716, p4720, p4721, p4722, p4730, p4731, p4732, p4733, p4780, p4781, p4782, p4783, p4789, p4795 |
| Remedy: | - stop the trace before parameterization.  
- if required, start the trace. |
### A02075 Trace: Pretrigger time too long

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  
  The selected pretrigger time must be shorter than the trace time.

  See also: p4721 (Trace recording time), p4722 (Trace trigger delay)

- **Remedy:** Check the pretrigger time setting and change if necessary.

### F02080 Trace: Parameterization deleted due to unit changeover

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  
  The trace parameterization in the drive unit was deleted due to a unit changeover or a change in the reference parameters.

- **Remedy:** Restart trace.

### A02099 Trace: Insufficient Control Unit memory

- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  
  The memory space still available on the Control Unit is no longer sufficient for the trace function.

- **Remedy:**
  
  Reduce the memory required, e.g. as follows:
  - reduce the trace time.
  - increase the trace clock cycle.
  - reduce the number of signals to be traced.

  See also: r4708 (Trace memory space required), r4799 (Trace memory location free)

### A02100 Drive: Computing dead time current controller too short

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  
  The value in p0118 produces a dead time of one clock cycle because it is prior to setpoint availability.

  Possible causes:
  - A parameter backup with a version higher than 4.3 was loaded to a version less than or equal to 4.3.
  - The system properties after replacing a component no longer match the parameter assignment.

  Alarm value (r2134, floating point):

  The minimum value for p0118 where a dead time no longer occurs.

- **Remedy:**
  
  - set p0118 to zero.
  - set p0118 to a value greater than or equal to the alarm value (for p1810.11 = 1)
  - set p0117 (from the device) to an automatic setting (p0117 = 1).
  - check the firmware versions of the components involved.

  See also: p0117 (Current controller computing dead time mode), p0118 (Current controller computing dead time)

### A02150 OA: Application cannot be loaded

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  
  The system was not able to load an OA application.

  Alarm value (r2124, interpret hexadecimal):

  Only for internal Siemens troubleshooting.
### List of faults and alarms

**F02151 (A) OA: Internal software error**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
</tbody>
</table>
| Reaction:      | Infeed: OFF2 (NONE, OFF1)  
                | Vector: OFF2 (NONE, OFF1, OFF3) |
| Acknowledge:   | IMMEDIATELY (POWER ON) |
| Cause:         | An internal software error has occurred within an OA application.  
                | Fault value (r0949, interpret hexadecimal):  
                | Only for internal Siemens troubleshooting. |
| Remedy:        | - carry out a POWER ON (power off/on) for all components.  
                | - upgrade firmware to later version.  
                | - contact the Hotline.  
                | - replace the Control Unit. |
| Note:          | OA: Open Architecture  
                | See also: r4950, r4955, p4956, r4957 |

**F02152 (A) OA: Insufficient memory**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
</tbody>
</table>
| Cause:         | Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, OA applications, blocks, etc).  
                | Fault value (r0949, interpret decimal):  
                | Only for internal Siemens troubleshooting. |
| Remedy:        | - change the configuration on this Control Unit (e.g. fewer drives, function modules, data sets, OA applications, blocks, etc).  
                | - use an additional Control Unit. |
| Note:          | OA: Open Architecture  
                | See also: r4950, r4955, p4956, r4957 |

**F03000 NVRAM fault on action**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause:         | A fault occurred during execution of action p7770 = 1, 2 for the NVRAM data.  
                | Fault value (r0949, interpret hexadecimal):  
                | yyxx hex: yy = fault cause, xx = application ID  
                | yy = 1:  
                | The action p7770 = 1 is not supported by this version if Drive Control Chart (DCC) is activated for the drive object concerned.  
                | yy = 2:  
                | The data length of the specified application is not the same in the NVRAM and the backup.  
                | yy = 3:  
                | The data checksum in p7774 is not correct. |
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**List of faults and alarms**

#### F03001 NVRAM checksum incorrect
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:** A checksum error occurred when evaluating the non-volatile data (NVRAM) on the Control Unit. The NVRAM data affected was deleted.
- **Remedy:** Carry out a POWER ON (power off/on) for all components.

#### F03500 (A) TM: Initialization
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1 (OFF2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** When initializing the Terminal Modules, the terminals of the Control Unit or the Terminal Board 30, an internal software error has occurred.
  - Fault value (r0949, interpret decimal):
    - y = Only for internal Siemens troubleshooting
    - xxx = component number (p0151)
- **Remedy:**
  - power down/power up the power supply for the Control Unit.
  - check the DRIVE-CLiQ connection.
  - if required, replace the Terminal Module.
  - The Terminal Module should be directly connected to a DRIVE-CLiQ socket of the Control Unit.
  - If the fault occurs again, replace the Terminal Module.

#### A03501 TM: Sampling time change
- **Message value:** -
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The sampling times of the inputs/outputs were changed.
  - This change only becomes valid after the next boot.
- **Remedy:** Carry out a POWER ON.

#### F03505 (N, A) TM: Analog input wire breakage
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1 (NONE, OFF2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** The wire-break monitoring for an analog input has responded.
  - The input current of the analog input has exceeded the threshold value parameterized in p4061[x].
  - Index x = 0: Analog input 0 (X522.1 to .3)
  - Index x = 1: Analog input 1 (X522.4 to .5)
  - Fault value (r0949, interpret decimal):
    - y = analog input (0 = analog input 0 (AI 0), 1 = analog input 1 (AI 1))
    - xxx = component number (p0151)
**Note:**
For the following analog input type, the wire breakage monitoring is active:
p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)

**Remedy:**
- check the wiring for interruptions.
- Check the magnitude of the injected current - it is possible that the infed signal is too low.
- Check the load resistor (250 Ohm).

**Note:**
The input current measured by the Terminal Module can be read out from r4052[x].
For p4056[x] = 3 (unipolar current input monitored (+4 ... +20 mA)) the following applies:
A current less than 4 mA is not displayed in r4052[x] - but instead r4052[x] = 4 mA is output.

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

### A03506 (F, N) 24 V power supply missing
**Message value:** %1
**Drive object:** All objects
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** The 24 V power supply for the digital outputs (X124) is missing.
**Remedy:** Check the terminals for the power supply voltage (X124, L1+, M).

**Reaction upon F:** NONE
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

### A03510 (F, N) TM: Calibration data not plausible
**Message value:** %1
**Drive object:** BJ_INF, CU_G130_DP, CU_G130_PN, CU_G150_DP, CU_G150_PN, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** During ramp-up, the Terminal Module 31 (TM31) calibration data is read in and checked for plausibility. At least one calibration data point was determined to be invalid.
Alarm value (r2124, interpret binary):
Bit 1: 10 V value, analog input 0 invalid.
Bit 3: 10 V value, analog input 1 invalid.
Bit 4: Offset, analog output 0 invalid.
Bit 5: 10 V value, analog output 0 invalid.
Bit 6: Offset, analog output 1 invalid.
Bit 7: 10 V value, analog input 1 invalid.
**Remedy:**
- power down/power up the power supply for the Control Unit.
- check the DRIVE-CLIQ connection.
**Note:**
If it reoccurs, then replace the module.
In principle, operation could continue.
The analog channel involved possibly does not achieve the specified accuracy.

**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
A03510 (F, N)  
CU: Calibration data not plausible  
Message value:  %1  
Drive object:  VECTOR_G  
Reaction:  NONE  
Acknowledge:  NONE  
Cause:  During booting, the calibration data for the analog inputs is read and checked with respect to plausibility. At least one calibration data point was determined to be invalid.  
Remedy:  - power down/power up the power supply for the Control Unit.  
         - check the DRIVE-CLiQ connection.  
         Note:  If it reoccurs, then replace the module.  
         In principle, operation could continue.  
         The analog channel involved possibly does not achieve the specified accuracy.  
Reaction upon F:  Infeed: NONE (OFF1, OFF2)  
         Vector: NONE  
Acknowl. upon F:  IMMEDIATELY (POWER ON)  
Reaction upon N:  NONE  
Acknowl. upon N:  NONE  

A03550  
TM: Speed setpoint filter natural frequency > Shannon frequency  
Message value:  -  
Drive object:  All objects  
Reaction:  NONE  
Acknowledge:  NONE  
Cause:  The natural filter frequency of the speed setpoint filter (p1417) is greater than or equal to the Shannon frequency.  
         The Shannon frequency is calculated according to the following formula:  
         \[ \frac{0.5}{p4099[3]} \]  
Remedy:  Reduce the natural frequency of the speed setpoint filter (PT2 low pass) (p1417).  

F03590 (N, A)  
TM: Module not ready  
Message value:  %1  
Drive object:  All objects  
Reaction:  Infeed: OFF2 (NONE)  
         Vector: OFF2 (ENCODER, IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
Acknowledge:  IMMEDIATELY (POWER ON)  
Cause:  The Terminal Module involved does not send a ready signal and no valid cyclic data.  
         Fault value (r0949, interpret decimal):  
         Drive object number of the Terminal Module involved.  
Remedy:  - check the 24 V power supply.  
         - check the DRIVE-CLiQ connection.  
         - check whether the sampling time of the drive object involved is not equal to zero (p4099[0]).  
Reaction upon N:  NONE  
Acknowl. upon N:  NONE  
Reaction upon A:  NONE  
Acknowl. upon A:  NONE  

A05000 (N)  
Power unit: Overtemperature heat sink AC inverter  
Message value:  -  
Drive object:  B_INF, VECTOR_G  
Reaction:  NONE  
Acknowledge:  NONE  
Cause:  The alarm threshold for overtemperature at the inverter heat sink has been reached. The response is set using p0290.  
         If the temperature of the heat sink increases by an additional 5 K, then fault F30004 is initiated.
### Faults and alarms

#### List of faults and alarms

**Remedy:**
Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the cooling failed?

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

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| A05001 (N) | Power unit: Overtemperature depletion layer chip | -             | B_INF       | NONE     | NONE        | Alarm threshold for overtemperature of the power semiconductor in the AC converter has been reached. | Note:
- The response is set using p0290.
- If the depletion layer temperature increases by an additional 15 K, then fault F30025 is triggered. |
|        |                                                  |               | VECTOR_G    | NONE     | NONE        |                                                                       |                                                                       |
| A05002 (N) | Power unit: Air intake overtemperature          | -             | B_INF, VECTOR_G | NONE     | NONE        | The alarm threshold for the air intake overtemperature has been reached. For air-cooled power units, the threshold is 42 °C (hysteresis 2 K). The response is set using p0290. If the air intake temperature increases by an additional 13 K, then fault F30035 is output. | Note:
- Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation. |
A05003 (N)  Power unit: Internal overtemperature
Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The alarm threshold for internal overtemperature has been reached.
If the temperature inside the power unit increases by an additional 5 K, then fault F30036 is triggered.
Remedy:  Check the following:
- is the ambient temperature within the defined limit values?
- has the fan failed? Check the direction of rotation.

A05004 (N)  Power unit: Rectifier overtemperature
Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The alarm threshold for the overtemperature of the rectifier has been reached. The response is set using p0290.
If the temperature of the rectifier increases by an additional 5 K, then fault F30037 is triggered.
Remedy:  Check the following:
- is the ambient temperature within the defined limit values?
- have the load conditions and the load duty cycle been appropriately dimensioned?
- has the fan failed? Check the direction of rotation.
- has a phase of the line supply failed?
- is an arm of the supply (incoming) rectifier defective?

A05005  Cooling unit: Cooling medium flow rate too low
Message value:  %1
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  Cooling unit: Alarm - flow rate has fallen below the alarm value
Remedy:  Check the feedback signals and parameter assignment (p0260 ... p0267).
Check the coolant feed.

A05006 (N)  Power unit: Overtemperature thermal model
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The temperature difference between the chip and heat sink has exceeded the permissible limit value (blocksize power units only).
Depending on p0290, an appropriate overload response is initiated.
See also: r0037
Remedy:  Not necessary.
The alarm disappears automatically once the limit value is undershot.
Note:
- If the alarm does not disappear automatically and the temperature continues to rise, this can result in fault F30024.
See also: p0290 (Power unit overload response)
N05007 (A)  Power unit: Overtemperature thermal model (chassis PU)
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The temperature difference between the chip and heat sink has exceeded the permissible limit value (r0293) (chassis power units only).
Depending on p0290, an appropriate overload response is initiated.
See also: r0037, r0293 (Power unit alarm threshold model temperature)
Remedy:  Not necessary.
The alarm disappears automatically once the limit value is undershot.
See also: p0290 (Power unit overload response)
Reaction upon A:  NONE
Acknowl. upon A:  NONE

F05050  Parallel circuit: Pulse enable in spite of pulse inhibit
Message value:  %1
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  A power unit signals that the pulses are enabled although the pulses are inhibited.
Fault value (r0949, interpret decimal):
Number of the power unit involved.
Remedy:  The power unit is defective and must be replaced.

F05051  Parallel circuit: Power unit pulse enable missing
Message value:  %1
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  For one or several power units, the pulses were not able to be enabled.
Fault value (r0949, interpret decimal):
Number of the power unit involved.
Remedy:  - acknowledge power unit faults that are still present.
- inhibit the pulses of the power unit involved (p7001).

A05052 (F)  Parallel circuit: Illegal current dissymmetry
Message value:  %1
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The deviation of the individual currents of the power units exceeds the alarm threshold specified in p7010.
Alarm value (r2124, interpret decimal):
1: Phase U.
2: Phase V.
3: Phase W.
Remedy:  - inhibit the pulses of the faulted power unit (p7001).
- check the connecting cables. Loose contacts can cause current spikes.
- the motor reactors are non-symmetrical or faulty and must be replaced.
- the CTs must be calibrated or replaced.
Reaction upon F:  Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F:  IMMEDIATELY
### List of faults and alarms

**A05053 (F)**  
**Parallel circuit: Inadmissible DC link voltage dissymmetry**  
- **Message value:** -  
- **Drive object:** B_INF, VECTOR_G  
- **Reaction:** NONE  
- **Acknowledge:** NONE  
- **Cause:** The deviation of the DC link voltage measured values exceeds the alarm threshold specified in p7011.  
- **Remedy:**  
  - inhibit the pulses of the faulted power unit (p7001).  
  - check the DC link connecting cables.  
  - the DC link voltage measurement is incorrect and must be calibrated or renewed.  
- **Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
  Vector: NONE (OFF1, OFF2, OFF3, STOP1, STOP2)  
- **Acknowl. upon F:** IMMEDIATELY

**A05054**  
**Parallel circuit: Power unit de-activated**  
- **Message value:** %1  
- **Drive object:** B_INF, VECTOR_G  
- **Reaction:** NONE  
- **Acknowledge:** NONE  
- **Cause:** For the drive object involved, fewer power units connected in parallel are active than exist in the target topology. Operation is only possible at reduced power (power derating).  
- **Remedy:** Re-activate the de-activated power units if required.  
  See also: p0125 (Activate/de-activate power unit components), p0895 (Activate/de-activate power unit components), p0897 (Parking axis selection)

**F05055**  
**Parallel connection: Power units with illegal code numbers**  
- **Message value:** Parameter: %1  
- **Drive object:** B_INF  
- **Reaction:** OFF2 (NONE)  
- **Acknowledge:** IMMEDIATELY  
- **Cause:** The code numbers of the power units are not permissible. For parallel circuit configurations, only power units with identical power unit data may be used. Possible causes:  
  - The code numbers of the power units do not match.  
  For booksize drive units, the following additionally applies:  
  - a parallel connection is not possible for the power units being used.  
  - there are too many power units being used in the parallel connection.  
  Fault value (r0949, interpret decimal): Parameter in which the inadmissible power unit code number was detected.  
- **Remedy:**  
  - Use power units with the same code number.  
  For booksize drive units, the following additionally applies:  
  - use power units which are permitted for a parallel connection.  
  - reduce the number of power units being used in the parallel connection.  

**F05055**  
**Parallel connection: Power units with illegal code numbers**  
- **Message value:** Parameter: %1  
- **Drive object:** VECTOR_G  
- **Reaction:** OFF2 (NONE)  
- **Acknowledge:** IMMEDIATELY  
- **Cause:** The code numbers of the power units do not match. Fault value (r0949, interpret decimal): Parameter in which the first different power unit code number was detected.  
- **Remedy:**  
  - Use power units with the same code number.  
  For parallel circuit configurations, only power units with identical power unit data may be used.
F05056  Parallel circuit: Power unit EPROM versions differ
Message value: Parameter: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The EEPROM versions of the power units do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: Use power units with the same EPROM version.
For parallel circuit configurations, only power units with identical EEPROM versions may be used.

F05057  Parallel circuit: Power unit firmware versions differ
Message value: Parameter: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The firmware versions of the power units connected in parallel do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: Use power units with the same firmware version.
For parallel circuit configurations, only power units with identical firmware versions may be used.

F05058  Parallel circuit: VSM EEPROM versions differ
Message value: Parameter: %1
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The EEPROM versions of the Voltage Sensing Modules (VSM) do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: For parallel circuit configurations, only Voltage Sensing Modules (VSM) with identical EEPROM versions may be used.

F05059  Parallel circuit: VSM firmware versions differ
Message value: Parameter: %1
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The firmware versions of the Voltage Sensing Module (VSM) do not match.
Fault value (r0949, interpret decimal):
Parameter in which the first different version number was detected.
Remedy: For parallel circuit configurations, only Voltage Sensing Modules (VSM) with identical firmware versions may be used.

F05060  Parallel circuit: Power unit firmware version does not match
Message value: Parameter: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Firmware from version V02.30.01.00 is required when connecting the power units in parallel.
Remedy: Update the firmware of the power units (at least V02.30.01.00).
### F05061 Infeed, number of VSM

**Message value:** %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The number of active Voltage Sensing Modules (VSM) for the drive object infeed with chassis power units is not correct.  
For A_Infeed, each active power unit must be assigned an active VSM also for a parallel circuit configuration.  
For S_Infeed, the active drive object, must be assigned at least one active VSM.  
Fault value (r0949, interpret decimal):  
Number of VSMs that are currently assigned to the drive object.  
**Remedy:** Adapts the number of active Voltage Sensing Modules (VSM).

### F05064 Parallel connection: Pulse synchronization error

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (OFF1, OFF3)  
**Acknowledge:** POWER ON (IMMEDIATELY)  
**Cause:** The pulse synchronization of at least one of the power units connected in parallel is incorrect.  
**Remedy:** Restart the drive system.

### F06000 Infeed: Precharging monitoring time expired

**Message value:** -  
**Drive object:** B_INF  
**Reaction:** OFF2 (OFF1)  
**Acknowledge:** IMMEDIATELY  
**Cause:** After the line contactor closes the power unit does not signal the READY state within the monitoring time (p0857).  
The end of the DC link pre-charging was not able to be completed for one of the following reasons:  
1) There is no line supply voltage connected.  
2) The line contactor/line side switch has not been closed.  
3) The line supply voltage is too low.  
4) Line supply voltage incorrectly set (p0210).  
5) The pre-charging resistors are overheated as there were too many pre-charging operations per time unit.  
6) The pre-charging resistors are overheated as the DC link capacitance is too high.  
7) The pre-charging resistors are overheated because when there is no "ready for operation" (r0863.0) of the infeed unit, power is taken from the DC link.  
8) The pre-charging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.  
9) The DC link has either a ground fault or a short-circuit.  
10) The pre-charging circuit is possibly defective (only for chassis units).  
See also: p0210 (Drive unit line supply voltage), p0857 (Power unit monitoring time)  
**Remedy:** In general:  
- check the line supply voltage at the connecting terminals.  
- check the line supply voltage setting (p0210).  
- check the monitoring time and, if required, increase (p0857).  
- where relevant, observe additional power unit messages/signals (e.g. F30027).  
- the following applies to booksize units: Wait (approx. 8 min.) until the pre-charging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.  
Re 5):  
- carefully observe the permissible pre-charging frequency (refer to the appropriate Equipment Manual).  
Re 6):  
- check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC-link capacitance if necessary (refer to the appropriate Equipment Manual)  
Re 7):  
- interconnect the ready-for-operation signal from the infeed unit (r0863.0) in the enable logic of the drives connected to this DC link  
Re 8):  
- check the connections of the external line contactor. The line contactor must be open during DC-link fast discharge.
Faults and alarms

List of faults and alarms

Re 9):
- check the DC link for ground faults or short circuits.

F06010  Infeed: Power unit EP 24 V missing in operation
Message value: -
Drive object: B_INF
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: In operation, the pulse enable via terminal EP at the Line Module (X21.3, X21.4) was withdrawn.
Note:
EP: Enable Pulses (pulse enable)
Remedy:
- do not open the line side switch in operation - only when the pulses are inhibited.
- check the wiring of terminal EP (X21.3, X21.4) at the Line Module to exclude any poor contacts.

F06100  Infeed: Shutdown due to line supply undervoltage condition
Message value: %1
Drive object: B_INF
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The filtered (steady-state) value of the line supply voltage is less than the fault threshold (p0283).
Fault condition: \( V_{rms} < p0283 \times p0210 \)
Fault value (r0949, floating point):
Actual steady-state line supply voltage.
Remedy:
- check the line supply.
- check the line supply voltage (p0210).
- check the threshold value (p0283).

A06105 (F)  Infeed: Line supply undervoltage
Message value: %1
Drive object: B_INF
Reaction: NONE
Acknowledge: NONE
Cause:
The filtered (steady-state) value of line supply voltage is lower than the alarm threshold (p0282).
Alarm condition: \( V_{rms} < p0282 \times p0210 \)
Alarm value (r2124, floating point):
Actual steady-state line supply voltage.
Remedy:
- check the line supply.
- check the line supply voltage (p0210).
- check the alarm threshold (p0282).
Reaction upon F: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F06211  Infeed: Summation current impermissibly high
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
The smoothed sum of the phase currents \((i_1 + i_2 + i_3)\) is impermissibly high. The summed current has exceeded the parameterized threshold for the ground fault monitoring (p0287).
Possible causes:
- there is a ground fault that results in a high summation current (r0069.6). The DC component in the line currents can damage/destroy the power unit, reactor, filter or motor!
- the current measurement in the power unit is defective.
Fault value (r0949, floating point):
Smoothed total of the phase currents.
Remedy:
- check the line supply for ground faults and remove any that are present.
- check the set threshold for the ground fault monitoring (p0287).
- if required, replace the power unit.
**A06301 (F)**  Infeed: Line supply overvoltage  
**Message value:** Line supply voltage: %1  
**Drive object:** B_INF  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The filtered (steady-state) value of the rms line supply voltage Vrms is higher than the alarm threshold (p0281).  
Alarm condition: Vrms > p0281 * p0210.  
Alarm value (r2124, floating point): Actual steady-state line supply voltage.  
**Remedy:**  
- check the line supply.  
- check the line supply voltage (p0210).  
- check the alarm threshold (p0281).  
See also: p0210 (Drive unit line supply voltage)  
**Reaction upon F:** NONE (OFF1, OFF2)  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  

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**F06310 (A)**  Infeed: Supply voltage (p0210) incorrectly parameterized  
**Message value:** Line supply voltage: %1  
**Drive object:** B_INF  
**Reaction:** NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** After pre-charging was completed, the line supply voltage Vrms was calculated using the measured DC link voltage.  
This voltage Vrms is not within the tolerance range of the supply voltage.  
The following applies for the tolerance range: 85 % * p0210 < Vrms < 110 % * p0210  
Fault value (r0949, floating point): Line supply voltage Vrms present.  
See also: p0210 (Drive unit line supply voltage)  
**Remedy:**  
- check the parameterized supply voltage and if required change (p0210).  
- check the line supply voltage.  
See also: p0210 (Drive unit line supply voltage)  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE  

---  

**F06310 (A)**  Supply voltage (p0210) incorrectly parameterized  
**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** For AC/AC drive units, the measured DC voltage lies outside the tolerance range after pre-charging has been completed.  
The following applies for the tolerance range: 1.16 * p0210 < r0070 < 1.6 * p0210  
Note: The fault can only be acknowledged when the drive is powered down.  
See also: p0210 (Drive unit line supply voltage)  
**Remedy:**  
- check the parameterized supply voltage and if required change (p0210).  
- check the line supply voltage.  
See also: p0210 (Drive unit line supply voltage)  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE  

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**F06311**  Infeed: Supply voltage (p0210) incorrect  
**Message value:** Line supply voltage: %1  
**Drive object:** B_INF  
**Reaction:** OFF2 (OFF1)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The line voltage nominal value indicated in p0210 is outside the nominal voltage range of the power unit.
After pre-charging was completed, the actual line supply voltage $V_{\text{rms}}$ was calculated using the measured DC link voltage. This voltage $V_{\text{rms}}$ does not lie within the extended tolerance range of the supply voltage set in p0210.

The following applies for the extended tolerance range: $75 \% \times p0210 < V_{\text{rms}} < 120 \% \times p0210$

Alarm value (r2124, floating point):
- Line supply voltage $V_{\text{rms}}$ present.
  - See also: p0210 (Drive unit line supply voltage)

Remedy:
- check the parameterized supply voltage and if required change (p0210).
- check the line supply voltage.
  - See also: p0210 (Drive unit line supply voltage)

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F06700 (A)</td>
<td>Infeed: Switch line contactor for load condition</td>
</tr>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Drive object:</td>
<td>B_INF</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE (OFF2)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>For an ON command, the infeed line contactor should be switched under load.</td>
</tr>
</tbody>
</table>
| Remedy: | - do not load the DC link if the infeed has not issued an operating signal ($r0863.0 = 1$).
- after the infeed has been powered down, all power units connected to the DC link should be powered down. To realize this, the operating signal of the infeed ($r0863.0$) must be suitably interconnected. |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |

<table>
<thead>
<tr>
<th>Fault Code</th>
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</tr>
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<tbody>
<tr>
<td>A06810 (F)</td>
<td>Infeed: DC link voltage alarm threshold</td>
</tr>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Drive object:</td>
<td>B_INF</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | In operation, the DC link voltage has dropped to below the alarm threshold. The alarm threshold is obtained from the sum of p0279 and r0296. Possible causes include:
- line supply voltage dip or another line supply fault.
- overload of the infeed.
- for Active Line Module: Controller incorrectly parameterized. |
| Remedy: | - check the line voltage and line supply quality.
- reduce the power drawn, avoid step-like load changes
- for Active Line Module: Adapt the controller parameterization (e.g. automatic line supply identification (p3410 = 4, 5)). |
| Reaction upon F: | NONE (OFF1, OFF2) |
| Acknowl. upon F: | IMMEDIATELY (POWER ON) |

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>A06900 (F)</td>
<td>Braking Module: Fault (1 -&gt; 0)</td>
</tr>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>B_INF</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The Braking Module signals a fault (1 -> 0) via X21.4 ("booksize" format) or X21.5 ("chassis" format).
This signal is wired to a system digital input and correspondingly interconnected using binector input p3866[0...7]. Possible causes:
- Wiring of the signal or BICO interconnection of the signal source incorrect.
- Overtemperature
- Electronics power supply missing.
- Ground fault/short-circuit.
- Internal component fault. |
| See also: | p3866 (Braking Module fault) |
Remedy: - check binector input p3866[0...7] and the wiring from terminal X21.4 ("booksize" format) or X21.5 ("chassis" format).
- reduce the number of braking operations.
- Check the 24 V power supply of the component.
- Check for a ground fault or short circuit.
- Replace the component if necessary.

Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY

A06901 Braking Module: Pre-alarm I2t shutdown
Message value: %1
Drive object: B_INF
Reaction: NONE
Acknowledge: NONE
Cause: The Braking Module "Booksize" format signals "Pre-alarm I2t shutdown" via terminal X21.3.
This signal is wired to a system digital input and correspondingly interconnected using binector input p3865[0...7].
Note: This function is not supported for the "chassis" format.

Remedy: - reduce the number of braking operations.
- check binector input p3865[0...7] and the wiring from terminal X21.3 of the particular Braking Module.

A06904 (N) Braking Module internal is inhibited
Message value: %1
Drive object: B_INF
Reaction: NONE
Acknowledge: NONE
Cause: The internal Braking Module was inhibited via binector input p3680 = 1 signal.
In the inhibited state, energy cannot be dissipated using the braking resistor.
See also: p3680 (Braking Module internal inhibit)

Remedy: Release the internal Braking Module (BI: p3680 = 0 signal).

Reaction upon N: NONE
Acknowl. upon N: NONE

A06905 Braking Module internal I2t shutdown alarm
Message value: %1
Drive object: B_INF
Reaction: NONE
Acknowledge: NONE
Cause: The internal Braking Module outputs an alarm due to the high I2t value.
80% of the maximum switch-on duration of the braking resistor has been reached.
Note: This message is also displayed via BO: p3685.
See also: r3685 (Digital Braking Module: Pre-alarm I2t shutdown)

Remedy: Reduce the number of braking operations.

F06906 (A) Braking Module internal fault
Message value: %1
Drive object: B_INF
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The internal Braking Module outputs a fault due to overcurrent or an excessively high I2t value and is therefore inhibited.
Note: This message is also displayed via BO: p3686.
Fault value (r0949, interpret bitwise binary):
Bit 0 = 1: I2t exceeded
Bit 1 = 1: overcurrent
See also: r3686 (Digital Braking Module Fault)
Faults and alarms

List of faults and alarms

Remedy: Reduce the number of braking operations.
Reaction upon A: NONE
Acknow. upon A: NONE

F06907 Braking Module internal overtemperature
Message value: -
Drive object: B_INF
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The temperature sensor connected to the braking resistor signals an overtemperature. The Braking Module is still active. If the overtemperature persists for more than 60 s, fault F06908 is output, and the braking module is switched off.
See also: r3687 (Digital Braking Module pre-alarm overtemperature)
Remedy: - reduce the temperature at the sensor.
- check the temperature sensor connection.

F06908 Braking Module internal overtemperature shutdown
Message value: -
Drive object: B_INF
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: Braking module shut down due to overtemperature at the temperature sensor of the braking resistor. The overtemperature is detected by the sensor for longer than 60 s.
See also: r3688 (Braking Module internal overtemperature shutdown)
Remedy: - reduce the temperature at the sensor.
- check the temperature sensor connection.

F06909 Braking Module internal Vce fault
Message value: %1
Drive object: B_INF
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The dip in the collector-emitter voltage (Vce) results in a Vce fault and shutdown.
See also: r3689 (Digital Braking Module Uce fault)
Remedy: - carry out a POWER ON (power off/on).
- replace the unit.

A06921 (N) Braking resistor phase unsymmetry
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The three resistors of the braking chopper are not symmetrical.
Remedy: - check the feeder cables to the braking resistors.
- If required, increase the value for detecting dissymmetry (p1364).
See also: p1360 (Braking chopper braking resistor cold), p1362 (Braking chopper activation threshold), r1363 (Braking chopper output voltage), p1364 (Braking chopper resistor asymmetry)

F06922 Braking resistor phase failure
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A phase failure for the brake resistor was detected.
Fault value (r0949, interpret decimal):
11: Phase U
12: Phase V
13: Phase W
See also: p3235 (Phase failure signal motor monitoring time)

Remedy:
Check the feeder cables to the braking resistors.
See also: p1360 (Braking chopper braking resistor cold), p1362 (Braking chopper activation threshold), r1363 (Braking chopper output voltage), p1364 (Braking chopper resistor asymmetry)

F07011  Drive: Motor overtemperature
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause:
KTY or no sensor:
The measured motor temperature or model temperature has exceeded the fault threshold (p0605) or the timer (p0606) has elapsed following the alarm threshold (p0604) being exceeded.
The response parameterized in p0610 becomes active.
PTC or bimetallic NC contact:
The response threshold of 1650 Ohm was exceeded or the NC contact opened and the timer (p0606) has expired.
The response parameterized in p0610 becomes active.
Possible causes:
- Motor is overloaded
- motor ambient temperature too high.
- PTC / bimetallic NC contact: Wire breakage or sensor not connected.
Fault value (r0949, interpret decimal):
200: The motor temperature model 1 (I2t) signals an overtemperature (p0612.0 = 1, p0611 > 0).
Number of the temperature channel leading to the message (for SME/TM120 (p0601 = 10, 11)).
See also: p0604, p0605, p0611, p0612
Remedy:
- Reduce the motor load.
- check the ambient temperature and the motor ventilation.
- check the wiring and the connection of the PTC or bimetallic NC contact.
See also: p0604, p0605, p0611, p0612

A07012 (N)  Drive: Motor temperature model 1/3 overtemperature
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The thermal I2t motor model for synchronous motors identified that the alarm threshold was exceeded.
See also: r0034 (Motor utilization), p0605 (Mot_temp_mod 1/2 threshold), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation)
Remedy:
- check the motor load and if required, reduce.
- check the motor ambient temperature.
- check the thermal time constant (p0611).
- check the overtemperature fault threshold (p0605), (= alarm threshold for the I2t motor model).
See also: r0034 (Motor utilization), p0605 (Mot_temp_mod 1/2 threshold), p0611 (I2t motor model thermal time constant), p0612 (Mot_temp_mod activation)

A07015  Drive: Motor temperature sensor alarm
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
An error was detected when evaluating the temperature sensor set in p0600 and p0601.
With the fault, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Faults and alarms
List of faults and alarms

Possible causes:
- wire breakage or sensor not connected (KTY: R > 1630 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).
Alarm value (r2124, interpret decimal):
- if SME/TM120 is selected (p0601 = 10, 11),
  this is the number of the temperature channel leading to the message.
Remedy:
- make sure that the sensor is connected correctly.
- check the parameterization (p0600, p0601).
See also: r0035, p0600 (Motor temperature sensor for monitoring), p0601, p0607 (Temperature sensor fault timer)

F07016  Drive: Motor temperature sensor fault
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF1 (NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  An error was detected when evaluating the temperature sensor set in p0600 and p0601.
Possible causes:
- wire breakage or sensor not connected (KTY: R > 1630 Ohm).
- measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).
Note:
If alarm A07015 is present, the time in p0607 is started. If the fault is still present after this time has expired, then fault F07016 is output; however, at the earliest, 50 ms after alarm A07015.
Fault value (r0949, interpret decimal):
- if SME/TM120 is selected (p0601 = 10, 11),
  this is the number of the temperature channel leading to the message.
See also: p0607 (Temperature sensor fault timer)
Remedy:
- make sure that the sensor is connected correctly.
- check the parameterization (p0600, p0601).
- induction motors: De-activate temperature sensor fault (p0607 = 0).
See also: r0035, p0600 (Motor temperature sensor for monitoring), p0601, p0607 (Temperature sensor fault timer)

F07080  Drive: Incorrect control parameter
Message value:  Parameter: %1
Drive object:  B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The closed-loop control parameters have been parameterized incorrectly (e.g. p0356 = L_spread = 0).
Fault value (r0949, interpret hexadecimal):
The fault value includes the parameter number involved.
The following parameter numbers only occur as fault values for vector drives:
p0310, for synchronous motors: p0341, p0344, p0350, p0357
The following parameter numbers do not occur as fault values for synchronous motors:
p0354, p0358, p0360
See also: p0310, p0311, p0341, p0344, p0350, p0354, p0356, p0357, p0358, p0360, p0400, p0404, p0408, p0640, p1082, p1300
Remedy:
Modify the parameter indicated in the fault value (r0949) (e.g. p0640 = current limit > 0).
See also: p0311, p0341, p0344, p0350, p0354, p0356, p0358, p0360, p0400, p0404, p0408, p0640, p1082

F07082  Macro: Execution not possible
Message value:  Fault cause: %1, supplementary information: %2, preliminary parameter number: %3
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The macro cannot be executed.
Fault value (r0949, interpret hexadecimal):
cccccbbbaa hex:
ccccc = preliminary parameter number, bb = supplementary information, aa = fault cause
Fault causes for the trigger parameter itself:
19: Called file is not valid for the trigger parameter.
20: Called file is not valid for parameter 15.
21: Called file is not valid for parameter 700.
22: Called file is not valid for parameter 1000.
23: Called file is not valid for parameter 1500.
24: Data type of a TAG is incorrect (e.g. Index, number or bit is not U16).

Fault causes for the parameters to be set:
25: Error level has an undefined value.
26: Mode has an undefined value.
27: A value was entered as string in the tag value that is not "DEFAULT".
31: Entered drive object type unknown.
32: A device was not able to be found for the determined drive object number.
34: A trigger parameter was recursively called.
35: It is not permissible to write to the parameter via macro.
36: Check, writing to a parameter unsuccessful, parameter can only be read, not available, incorrect data type, value range or assignment incorrect.
37: Source parameter for a BICO interconnection was not able to be determined.
38: An index was set for a non-indexed (or CDS-dependent) parameter.
39: No index was set for an indexed parameter.
41: A bit operation is only permissible for parameters with the parameter format DISPLAY_BIN.
42: A value not equal to 0 or 1 was set for a BitOperation.
43: Reading the parameter to be changed by the BitOperation was unsuccessful.
51: Factory setting for DEVICE may only be executed on the DEVICE.
61: The setting of a value was unsuccessful.

Remedy:
- check the parameter involved.
- check the macro file and BICO interconnection.

See also: p0015, p0700, p1000 (Macro Connector Inputs (CI) for speed setpoints), p1500 (Macro Connector Inputs (CI) for torque setpoints)

F07083 Macro: ACX file not found
Message value: Parameter: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The ACX file (macro) to be executed was not able to be found in the appropriate directory.
Fault value (r0949, interpret decimal):
Parameter number with which the execution was started.
See also: p0015, p0700, p1000 (Macro Connector Inputs (CI) for speed setpoints), p1500 (Macro Connector Inputs (CI) for torque setpoints)
Remedy:
- check whether the file is saved in the appropriate directory on the memory card.
Example:
If p0015 is set to 1501, then the selected ACX file must be located in the following directory:
.../PMACROS/DEVICE/P15/PM001501.ACX

F07084 Macro: Condition for WaitUntil not fulfilled
Message value: Parameter: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The WaitUntil condition set in the macro was not fulfilled in a certain number of attempts.
Fault value (r0949, interpret decimal):
Parameter number for which the condition was set.
Remedy:
Check and correct the conditions for the WaitUntil loop.
### F07085  Drive: Open-loop/closed-loop control parameters changed

**Message value:** Parameter: %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:**  
Open-loop/closed-loop control parameters have had to be changed for the following reasons:  
1. As a result of other parameters, they have exceeded the dynamic limits.  
2. They cannot be used due to the fact that the hardware detected not having certain features.  
**Fault value (r0949, interpret decimal):**  
Changed parameter number.  
340:  
The motor and control parameters were automatically calculated (p0340 = 1), because the vector control was subsequently activated as configuration (r0108.2).  
See also: p0640 (Current limit), p1082 (Maximum speed), p1300 (Open-loop/closed-loop control operating mode), p1800 (Pulse frequency setpoint)  
**Remedy:** Not necessary.  
It is not necessary to change the parameters as they have already been correctly limited.

### F07086  Units changeover: Parameter limit violation due to reference value change

**Message value:** Parameter: %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
A reference parameter was changed in the system. This resulted in the fact that for the parameters involved, the selected value was not able to be written in the per unit notation.  
The values of the parameters were set to the corresponding violated minimum limit/maximum limit or to the factory setting.  
**Possible causes:**  
- the steady-state minimum limit/maximum limit or that defined in the application was violated.  
**Fault value (r0949, parameter):**  
Diagnostics parameter to display the parameters that were not able to be re-calculated.  
**Remedy:**  
Check the adapted parameter value and if required correct.  
See also: r9450 (Reference value change parameter with unsuccessful calculation)

### F07088  Units changeover: Parameter limit violation due to units changeover

**Message value:** Parameter: %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
A changeover of units was initiated. This resulted in a violation of a parameter limit  
**Possible causes for the violation of a parameter limit:**  
- When rounding off a parameter corresponding to its decimal places, the steady-state minimum limit or maximum limit was violated.  
- inaccuracies for the data type "FloatingPoint".  
**In these cases, when the minimum limit is violated then the parameter value is rounded up and when the maximum limited is violated the parameter value is rounded down.**  
**Fault value (r0949, interpret decimal):**  
Diagnostics parameter r9451 to display all parameters whose value had to be adapted.  
See also: p0100 (IEC/NEMA mot stds), p0349 (System of units, motor equivalent circuit diagram data), p0505 (Selecting the system of units), p0595 (Technological unit selection)  
**Remedy:**  
Check the adapted parameter values and if required correct.  
See also: r9451 (Units changeover adapted parameters)
### A07089 Changing over units: Function module activation is blocked because the units have been changed over

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An attempt was made to activate a function module. This is not permissible if the units have already been changed over.  
See also: p0100 (IEC/NEMA mot stds), p0349 (System of units, motor equivalent circuit diagram data), p0505 (Selecting the system of units)  
**Remedy:** Restore units that have been changed over to the factory setting.

### F07100 Drive: Sampling times cannot be reset

**Message value:** Parameter: %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** When resetting drive parameter (p0976) sampling times cannot be reset using p0111, p0112, p0115.  
Fault value (r0949, interpret decimal): Parameter whose setting prevents the sampling times being reset.  
See also: r0110 (Basic sampling times)  
**Remedy:**  
- continue to work with the set sampling times.  
- before resetting the drive parameters, set the basic clock cycle p0110[0] to the original value.  
See also: r0110 (Basic sampling times)

### F07110 Drive: Sampling times and basic clock cycle do not match

**Message value:** Parameter: %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The parameterized sampling times do not match the basic clock cycle.  
Fault value (r0949, interpret decimal): The fault value specifies the parameter involved.  
See also: r0110, r0111, p0115  
**Remedy:** Enter the current controller sampling times so that they are identical to the basic clock cycle, e.g. by selecting p0112.  
Note which basic clock cycle is selected in p0111.  
The sampling times in p0115 can only be changed manually in the sampling times pre-setting "Expert" (p0112).  
See also: r0110, r0111, p0112, p0115

### A07200 Drive: Master control ON command present

**Message value:** -  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The ON/OFF1 command is present (no 0 signal).  
The command is either influenced via binector input p0840 (current CDS) or control word bit 0 via the master control.  
**Remedy:** Switch the signal via binector input p0840 (current CDS) or control word bit 0 via the master control to 0.

### F07220 (N, A) Drive: Master control by PLC missing

**Message value:** -  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** Irfeed: OFF1 (NONE, OFF2)  
Vector: OFF1 (NONE, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The "master control by PLC" signal was missing in operation.  
- interconnection of the binector input for "master control by PLC" is incorrect (p0854).
Faults and alarms

List of faults and alarms

- the higher-level control has withdrawn the "master control by PLC" signal.
- data transfer via the fieldbus (master/drive) was interrupted.

Remedy:
- check the interconnection of the biector input for "master control by PLC" (p0854).
- check the "master control by PLC" signal and, if required, switch in.
- check the data transfer via the fieldbus (master/drive).

Note:
If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

Remedy:
- check the interconnection of the biector input for "master control by PLC" (p0854).
- check the "master control by PLC" signal and, if required, switch in.
- check the data transfer via the fieldbus (master/drive).

Note:
If the drive should continue to operate after withdrawing "master control by PLC" then fault response must be parameterized to NONE or the message type should be parameterized as alarm.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F07300 (A) Drive: Line contactor feedback signal missing

Message value: -
Drive object: B_INF, VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY

Cause: - the line contactor was not able to be closed within the time in p0861.
- the line contactor was not able to be opened within the time in p0861.
- the line contactor dropped out during operation
- the line contactor has closed although the drive converter is powered down.

Remedy: - check the setting of p0860.
- check the feedback circuit from the line contactor.
- increase the monitoring time in p0861.

See also: p0860 (Line cont. fdbk sig), p0861 (Line contactor monitoring time)

Reaction upon A: NONE
Acknowl. upon A: NONE

F07311 Bypass motor switch

Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause: Fault value (r0949, interpret bitwise binary):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
Bit 3: Switch feedback signal too slow.

After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.

Bit 6: Drive switch feedback signal not consistent with the bypass state.

The drive switch is closed when switching-on or when switching-in the motor.

See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass, control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy: - check the transfer of the feedback signals.
- check the switch.

F07312 Bypass LSS:

Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause: Fault value (r0949, interpret bitwise binary):
Bit 1: Switch "Closed" feedback signal missing.
Bit 2: Switch "Open" feedback signal missing.
List of faults and alarms

Faults and alarms

Bit 3: Switch feedback signal too slow.
After switching, the system waits for the positive feedback signal. If the feedback signal is received later than the specified time, then a fault trip (shutdown) is issued.

Bit 6: Line Side Switch feedback signal not consistent with the bypass state.
When switching-on or when switching-in the motor, the line side switch is closed without this having been requested from the bypass.
See also: p1260 (Bypass configuration), r1261 (Bypass control/status word), p1266 (Bypass, control command), p1267 (Bypass changeover source configuration), p1269 (Bypass switch feedback signal), p1274 (Bypass switch monitoring time)

Remedy:
- check the transfer of the feedback signals.
- check the switch.

F07320 Drive: Automatic restart interrupted
Message value: %1
Drive object: B_INF
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause:
- The specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.
- there is no active ON command.
- the monitoring time for the power unit has expired (p0857).
- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically powered up again.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.
- increase the delay time in p1212 and/or the monitoring time in p1213.
- issue an ON command (p0840).
- either increase or disable the monitoring time of the power unit (p0857).

F07320 Drive: Automatic restart interrupted
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause:
- The specified number of restart attempts (p1211) has been completely used up because within the monitoring time (p1213) the faults were not able to be acknowledged. The number of restart attempts (p1211) is decremented at each new start attempt.
- there is no active ON command.
- the monitoring time for the power unit has expired (p0857).
- when exiting commissioning or at the end of the motor identification routine or the speed controller optimization, the drive unit is not automatically powered up again.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- increase the number of restart attempts (p1211). The actual number of starting attempts is displayed in r1214.
- increase the delay time in p1212 and/or the monitoring time in p1213.
- issue an ON command (p0840).
- either increase or disable the monitoring time of the power unit (p0857).
- Reduce the delay time for resetting the start counter p1213[1] so that fewer faults are registered in the time interval.

A07321 Drive: Automatic restart active
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The automatic restart (AR) is active. When the line supply returns and/or the causes of the existing faults are removed the drive is automatically restarted. The pulses are enabled and the motor starts to rotate.
### Faults and alarms

#### List of faults and alarms

**Remedy:**
- the automatic restart (AR) should, if required, be inhibited (p1210 = 0).
- an automatic restart can be directly interrupted by withdrawing the power-on command (BI: p0840).

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>F07330</td>
<td>Flying restart: Measured search current too low</td>
</tr>
<tr>
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<tr>
<td>A07350 (F)</td>
<td>Drive: Measuring probe parameterized to a digital output</td>
</tr>
<tr>
<td>A07400 (N)</td>
<td>Drive: DC link voltage maximum controller active</td>
</tr>
</tbody>
</table>

**Message value:**
- A07350 (F)
- A07400 (N)

**Drive object:**
- VECTOR_G
- All objects

**Reaction:**
- OFF2 (NONE, OFF1)
- NONE

**Acknowledge:**
- IMMEDIATELY
- NONE

**Cause:**
- During a flying restart, it was identified that the search current reached is too low. It is possible that the motor is not connected.
- It is not possible to power up with the motor rotating (no flying restart). In the following cases, the "flying restart" function is not supported:
  - Permanent-magnet and separately-excited synchronous motors (PEM, FEM): Operation with U/f characteristic.
  - Permanent-magnet synchronous motor (PEM): Encoderless operation without a Voltage Sensing Module (VSM) being connected.
- The measuring probe is connected to a bi-directional digital input/output and the terminal is set as output.
- The DC link voltage controller has been activated because the upper switch-in threshold has been exceeded (r1242, r1282).

**Remedy:**
- de-activate the "flying restart" function (p1200 = 0).
- change the open-loop/closed-loop control mode (p1300).
- connect a Voltage Sensing Module (VSM) (voltage measurement).
- set the terminal as input (p0728).
- de-select the measuring probe (p0488, p0489, p0580).

### Additional Information

- The ramp-down times are automatically increased in order to maintain the DC link voltage (r0070) within the permissible limits. There is a system deviation between the setpoint and actual speeds.
When the DC link voltage controller is switched out (disabled), this is the reason that the ramp-function generator output is set to the speed actual value.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))

Remedy:
- If the controller is not to intervene:
  - increase the ramp-down times.
  - switch-off the Vdc_max controller (p1240 = 0 for vector control, p1280 = 0 for U/f control).

If the ramp-down times are not to be changed:
- use a chopper or regenerative feedback unit.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07401 (N)  Drive: DC link voltage maximum controller de-activated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The Vdc_max controller can no longer maintain the DC link voltage (r0070) below the limit value (r1242, r1282) and was therefore switched out (disabled).
- the line supply voltage is permanently higher than specified for the power unit.
- the motor is permanently in the regenerative mode as a result of a load that is driving the motor.

Remedy:
- check whether the input voltage is within the permissible range.
- check whether the load duty cycle and load limits are within the permissible limits.

Reaction upon N: NONE
Acknowl. upon N: NONE

A07402 (N)  Drive: DC link voltage minimum controller active
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage controller has been activated as the lower switch-in threshold has been undershot (r1246, r1286).

The kinetic energy of the motor is used to buffer the DC link. The drive is therefore braked.

See also: r0056 (Status word, closed-loop control), p1240 (Vdc controller or Vdc monitoring configuration), p1280 (Vdc controller or Vdc monitoring configuration (U/f))

Remedy:
The alarm disappears when power supply returns.

Reaction upon N: NONE
Acknowl. upon N: NONE

F07403 (N, A)  Drive: Lower DC link voltage threshold reached
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DC link voltage monitoring is active (p1240, p1280 = 5, 6) and the lower DC link voltage threshold (r1246, r1286) was reached in the "Operation" state.

Remedy:
- check the line supply voltage.
- check the infeed.
- adapt the device supply voltage (p0210) or the switch-on level (p1245, p1285).
- disable the DC link voltage monitoring (p1240, p1280 = 0).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
F07404  Drive: Upper DC link voltage threshold reached  
Message value:  -  
Drive object:  VECTOR_G  
Reaction:  OFF2 (NONE, OFF1, OFF3)  
Acknowledge:  IMMEDIATELY  
Cause:  The DC link voltage monitoring is active (p1240, p1280 = 4, 6) and the upper DC link voltage threshold (r1242, r1282) was reached in the "Operation" state.  
Remedy:  - check the line supply voltage.  
- check the infeed module  
- adapt the device supply voltage (p0210).  
- disable the DC link voltage monitoring (p1240, p1280 = 0).  

F07405 (N, A)  Drive: Kinetic buffering minimum speed not reached  
Message value:  -  
Drive object:  VECTOR_G  
Reaction:  OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
Acknowledge:  IMMEDIATELY  
Cause:  During kinetic buffering the speed fell below minimum speed (p1257 or p1297 for vector drives with U/f control) and the line supply did not return.  
Remedy:  Check the speed threshold for the Vdc_min controller (kinetic buffering) (p1257, p1297).  
See also:  p1257 (Vdc_min controller speed threshold), p1297 (Vdc_min controller speed threshold (U/f))  
Reaction upon N:  NONE  
Acknowl. upon N:  NONE  
Reaction upon A:  NONE  
Acknowl. upon A:  NONE  

F07406 (N, A)  Drive: Kinetic buffering maximum time exceeded  
Message value:  -  
Drive object:  VECTOR_G  
Reaction:  OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)  
Acknowledge:  IMMEDIATELY  
Cause:  The maximum buffer time (p1255 and p1295 for vector drives with U/f control) has been exceeded without the line supply having returned.  
Remedy:  Check the time threshold for Vdc-min controller (kinetic buffering) (p1255, p1295).  
See also:  p1255 (Vdc_min controller time threshold), p1295 (Vdc_min controller time threshold (U/f))  
Reaction upon N:  NONE  
Acknowl. upon N:  NONE  
Reaction upon A:  NONE  
Acknowl. upon A:  NONE  

F07407  Drive: Vdc reduction not permissible  
Message value:  -  
Drive object:  VECTOR_G  
Reaction:  OFF2  
Acknowledge:  IMMEDIATELY  
Cause:  For chassis power units, the reduction of the line voltage (see r0212.0) is only possible for closed-loop control of the DC link voltage.  
Remedy:  - Activate DC link voltage control for the motor/generator.  
- de-activate line voltage reduction (p0212.0 = 0).  
See also:  p0212 (Power unit configuration)
A07409  Drive: U/f control, current limiting controller active
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The current limiting controller of the U/f control was activated because the current limit was exceeded.
Remedy: The alarm automatically disappears after one of the following measures:
- increase current limit (p0640).
- reduce the load.
- slow down the ramp up to the setpoint speed.

F07410  Drive: Current controller output limited
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1)
Acknowledge: IMMEDIATELY
Cause: The condition "I_act = 0 and Uq_set_1 longer than 16 ms at its limit" is present and can be caused by the following:
- motor not connected or motor contactor open.
- motor data and motor configuration (star-delta) do not match.
- no DC link voltage present.
- power unit defective.
- the "flying restart" function is not activated.
Remedy: - connect the motor or check the motor contactor.
- check the motor parameterization and the connection type (star-delta).
- check the DC link voltage (r0070).
- check the power unit.
- activate the "flying restart" function (p1200).

F07412  Drive: Commutation angle incorrect (motor model)
Message value: %1
Drive object: VECTOR_G
Reaction: ENCODER (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause: An incorrect commutation angle was detected that can result in a positive coupling in the speed controller.
Possible causes:
- The phase sequence of the output phases for the motor is incorrect (e.g. the phases are interchanged).
- the motor encoder is incorrectly adjusted with respect to the magnet position.
- the motor encoder is damaged.
- the angular commutation offset is incorrectly set (p0431).
- data to calculate the motor model has been incorrectly set (p0356 (motor-stator leakage inductance) and/or p0350 (motor-stator resistance) and/or p0352 (cable resistance).
- the changeover speed for the motor model is too low (p1752). The monitoring function only becomes effective above the changeover speed.
- pole position identification might have calculated an incorrect value when activated (p1982 = 1).
- the motor encoder speed signal is faulted.
- the control loop is instable due to incorrect parameterization.
Fault value (r0949, interpret decimal):
SERVO:
0: The comparison of the pole position angle from the encoder and motor model resulted in an excessively high value (> 80 ° electrical).
1: -
VECTOR:
0: The comparison of the pole position angle from the encoder and motor model resulted in an excessively high value (> 45 ° electrical).
1: The change in the speed signal from the motor encoder has changed by > p0492 within a current controller clock cycle.
Remedy: - Check the phase sequence for the motor, and if required, correct (wiring, p1820).
- if the encoder mounting was changed - re-adjust the encoder.
- replace the defective motor encoder.
Faults and alarms

List of faults and alarms

- correctly set the angular commutation offset (p0431). If required, determine using p1990.
- correctly set the motor stator resistance, cable resistance and motor-stator leakage inductance (p0350, p0352, p0356).
Calculate the cable resistance from the cross-section and length, check the inductance and stator resistance using the motor data sheet, measure the stator resistance, e.g. using a multimeter - and if required, again identify the values using the stationary motor data identification (p1910).
- increase the changeover speed for the motor model (p1752). The monitoring is completely de-activated for p1752 > p1082 (maximum speed).
- with pole position identification activated (p1982 = 1) check the procedure for pole position identification (p1980) and force a new pole position identification procedure by means of de-selection followed by selection (p1982 = 0 -> 1).

Note:
For High Dynamic Motors (1FK7xxx-7xxx), for applications with a higher current, if necessary, the monitoring should be disabled.

F07413  Drive: Commutation angle incorrect (pole position identification)
Message value:  
- Drive object:  VECTOR_G
Reaction:  ENCODER (NONE, OFF2)
Acknowledge:  IMMEDIATELY
Cause:  An incorrect commutation angle was detected that can result in a positive coupling in the speed controller. Within the pole position identification routine (p1982 = 2):
- a difference of > 45° electrical to the encoder angle was determined.
For VECTOR, within the encoder adjustment (p1990 = 2):
- a difference of > 6° electrical to the encoder angle was determined.
Remedy:
- correctly set the angular commutation offset (p0431).
- re-adjust the motor encoder after the encoder has been replaced.
- replace the defective motor encoder.
- check the pole position identification routine. If the pole position identification routine is not suitable for this motor type, then disable the plausibility check (p1982 = 0).

A07416  Drive: Flux controller configuration
Message value:  Parameter: %1, Index: %2, fault cause: %3
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The configuration of the flux control (p1401) is contradictory.
Alarm value (2124, interpret hexadecimal):
ccbbaaa hex
aaaa = Parameter
bb = Index
cc = fault cause
cc = 01 hex = 1 dec:
Quick magnetizing (p1401.6) for soft start (p1401.0).
cc = 02 hex = 2 dec:
Quick magnetizing (p1401.6) for flux build-up control (p1401.2).
cc = 03 hex = 3 dec:
Quick magnetizing (p1401.6) for Rs identification after restart (p0621 = 2).
Remedy:
Re fault cause = 1:
- Shut down soft start (p1401.0 = 0).
- Shut down quick magnetizing (p1401.6 = 0).
Re fault cause = 2:
- De-energize flux build-up control (p1401.2 = 0).
- Shut down quick magnetizing (p1401.6 = 0).
Re fault cause = 3:
- Re-parameterize Rs identification (p0621 = 0, 1)
- Shut down quick magnetizing (p1401.6 = 0).
F07417  Drive: Pulse technique not plausible (motor model)
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF2 (NONE)
Acknowledge:  IMMEDIATELY
Cause:  The evaluation of the test pulse response indicated incorrect values.
Fault value (r0949, interpret decimal):
0:
An impermissible pulse technique configuration was detected during ramp-up.
Possible causes:
- The pulse technique was initially selected when the system powered up (p1750.5 = 1) but the power unit component
  does not support the current oversampling required (see r0192.23). As a consequence, p1750.0 was de-selected
  automatically.
10:
   - The pulse response is repeatedly implausible.
   - Incorrect configuration of the power unit component
   - The power unit component is faulty.
20:
   - For the specified pulse amplitude, the measured pulse response is much higher than the expected value.
   - Strong oscillations have occurred.
   - The motor is short-circuited for high frequencies (output filter).
   - The motor is damaged.
Remedy:
For fault value = 0:
   - Once the pulse technique has been de-selected automatically (p1750.5=0), there are two possible options:
     - acknowledge the fault and save parameter p1750.5 = 0 -> field-oriented control mode to standstill is not used and
       replaced by transition to open-loop control at low speeds.
     - upgrade the power unit firmware (at least V04.30) -> field-oriented control mode to standstill is available.
   - For fault value = 10:
     - With active selection of the pulse technique (p1750.5 = 1):
       - POWER ON (switch-off/switch-on) the Control Unit and the power unit together again.
       - carry out a manual warm restart (p0009 = 30, p0976 = 2, 3).
     - If this does not solve the problem: Replace the power unit component.
   - For fault value = 20:
     - control parameters might have been adjusted (factory setting, commissioning).
     - filters must not be connected between motor and converter/inverter.
     - check the motor.

F07422  Drive: Reference model natural frequency > Shannon frequency
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE (OFF1, OFF2, OFF3)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The natural filter frequency of the PT2 element for the reference model (p1433) is greater than the Shannon fre-
quency.
The Shannon frequency is calculated according to the following formula: 0.5 / p0115[1]
Remedy:
- reduce the natural frequency of PT2 element for reference model (p1433).
- reduce the speed controller sampling time (p0115[1]).

F07426 (A)  Technology controller actual value limited
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  The actual value for the technology controller, interconnected via connector input p2264, has reached a limit.
Faults and alarms

List of faults and alarms

Fault value (r0949, interpret decimal):
1: upper limit reached.
2: lower limit reached.

Remedy:
- adapt the limits to the signal level (p2267, p2268).
- Check the actual value normalization (p0595, p0596).
- Deactivate evaluation of the limits (p2252 bit 3)

See also: p0595 (Technological unit selection), p0596 (Technological unit reference quantity), p2264 (Technology controller actual value), p2267 (Technology controller upper limit actual value), p2268 (Technology controller lower limit actual value)

Reaction upon A: NONE
Acknowl. upon A: NONE

A07428 (N) Technology controller parameterizing error
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Causes:
The technology controller has a parameterizing error.

Alarm value (r2124, interpret decimal):
1: The parameter value for the upper output limit of the technology controller p2291 is less than the parameter value of the lower output limit p2292.

Remedy:
1: Set p2291 to a higher value than p2292.

See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)

Reaction upon N: NONE
Acknowl. upon N: NONE

F07434 Drive: It is not possible to change the direction of rotation with the pulses enabled
Message value: -
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
A drive data set was selected - with the pulses enabled - which has a different parameterized direction of rotation (p1821).

It is only possible to change the motor direction of rotation using p1821 when the pulses are inhibited.

Remedy:
- change over the drive data set with the pulses inhibited.
- ensure that the changeover to a drive data set does not result in the motor direction of rotation being changed (i.e. for these drive data sets, the same value must be in p1821).

See also: p1821 (Dir of rot)

F07435 (N) Drive: Setting the ramp-function generator for sensorless vector control
Message value: Parameter: %1
Drive object: VECTOR_G
Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY

Causes:
During operation with sensorless vector control (r1407.1) the ramp-function generator was stopped (p1141) or bypassed (p1122). An internal setting command of the ramp-function generator output caused the set setpoint speed to be frozen or was not able to be realized.

Remedy:
- de-activate the holding command for the ramp-function generator (p1141).
- do not bypass the ramp-function generator (p1122).
- suppress the fault (p2101, p2119). This is necessary if the ramp-function generator is held using jogging and the speed setpoint is simultaneously inhibited (r0898.6).

Note:
For sensorless vector control it is not practical to read in the main setpoint of the speed control via p1155 or p1160 (p0922). In this case, the main setpoint should be injected before the ramp-function generator (p1070). The reason for this is that the ramp-function generator output is automatically set when transitioning from closed-loop speed controlled into open-loop speed controlled operation.

Reaction upon N: NONE
Acknowl. upon N: NONE
F07439  Drive: Higher current controller dynamic performance not possible
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF2 (NONE)
Acknowledge:  IMMEDIATELY
Cause:  The function "Current controller dynamics higher" (p1810.11 = 1) is selected, however is not supported by the power unit (r0192.27 = 0) or by the safety technology without encoder (9506 = 1, 3).
Fault value (r0949, interpret decimal):
  1:  - firmware of the booksize power unit is not up-to-date.
      - blocksize or S120 combi power unit was used.
  2:  - Encoderless safety technology is used.
Remedy:  In general:
  - Deselect the function "Current controller dynamics higher" (p1810.11 = 0) and if required, set the current, speed and position controller again or calculate (p0340 = 4).
  For fault value = 1:
    - If necessary, upgrade the firmware of the booksize power unit to a later version (version >= 4.4).
    - Use a booksize power unit (version >= 4.4).
  For fault value = 2:
    - If an encoder with Safety position actual values sensing is available (r0458[0...2].19 = 1), reparameterize the encoderless safety technology (p9506 = 1, 3) to safety technology with encoder (p9506 = 0).
    - Set p0340 = 4.
Note:  If the firmware has already been automatically upgraded, then only a POWER ON (switch-off/switch-on) is required.
Remedy:  In general:
  - Deselect the function "Current controller dynamics higher" (p1810.11 = 0) and if required, set the current, speed and position controller again or calculate (p0340 = 4).
  For fault value = 1:
    - If necessary, upgrade the firmware of the booksize power unit to a later version (version >= 4.4).
    - Use a booksize power unit (version >= 4.4).
  For fault value = 2:
    - If an encoder with Safety position actual values sensing is available (r0458[0...2].19 = 1), reparameterize the encoderless safety technology (p9506 = 1, 3) to safety technology with encoder (p9506 = 0).
    - Set p0340 = 4.
See also: r0192 (Power unit firmware properties), p1810 (Modulator configuration), p9506 (SI Motion function specification (Control Unit))

A07440  EPOS: Jerk time is limited
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The calculation of the jerk time $T_r = \max(p2572, p2573) / p2574$ resulted in an excessively high value so that the jerk time is internally limited to 1000 ms.
Note:  The alarm is also output if jerk limiting is not active.
Remedy:  - increase the jerk limiting (p2574).
     - reduce maximum acceleration or maximum deceleration (p2572, p2573).

A07441  LR: Save the position offset of the absolute encoder adjustment
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The status of the absolute encoder adjustment has changed.
In order to permanently save the determined position offset (p2525) it must be saved in a non-volatile fashion (p0971, p0977).
Remedy:  Not necessary.
     - This alarm automatically disappears after the offset has been saved.

F07442 (A)  LR: Multiturn does not match the modulo range
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  The ratio between the multiturn resolution and the modulo range (p2576) is not an integer number.
This results in the adjustment being set back, as the position actual value cannot be reproduced after power-off/power-on.
Faults and alarms

List of faults and alarms

Remedy: Make the ratio between the multiturn resolution and the modulo range an integer number.

The ratio \( v \) is calculated as follows:

1. Motor encoder without position tracking: 
   \[ v = \frac{(p0421 \times p2506 \times p0433 \times p2505)}{(p0432 \times p2504 \times p2576)} \]

2. Motor encoder with position tracking for the measuring gear:
   \[ v = \frac{(p0412 \times p2506 \times p2505)}{(p2504 \times p2576)} \]

3. Motor encoder with position tracking for the load gear:
   \[ v = \frac{(p2721 \times p2506 \times p0433)}{(p0432 \times p2576)} \]

4. Motor encoder with position tracking for the load and measuring gear:
   \[ v = \frac{(p2721 \times p2506)}{p2576} \]

5. Direct encoder without position tracking:
   \[ v = \frac{(p0421 \times p2506 \times p0433)}{(p0432 \times p2576)} \]

6. Direct encoder with position tracking for the measuring gear:
   \[ v = \frac{(p0412 \times p2506)}{p2576} \]

Note:
With position tracking, it is recommended that \( p0412 \) and \( p2721 \) are changed.
See also: \( p0412 \) (Measuring gear, absolute encoder, rotary, revolutions, virtual), \( p0432 \) (Gearbox factor, encoder revolutions), \( p0433 \) (Gearbox factor, motor/load revolutions), \( p2721 \) (Load gear, rotary absolute encoder, revolutions, virtual).

Reaction upon A: NONE
Acknowl. upon A: NONE

F07443 (A) LR: Reference point coordinate not in the permissible range

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The reference point coordinate received when adjusting the encoder via connector input p2599 lies outside the half of the encoder range and cannot be set as actual axis position.
Fault value (r0949, interpret decimal):
Maximum permissible value for the reference point coordinate.
Remedy: Set the reference point coordinate to a lower value than specified in the fault value.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07446 (A) Load gear: Position tracking cannot be reset

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking cannot be reset.
Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).
Reaction upon A: NONE
Acknowl. upon A: NONE

F07447 Load gear: Position tracking, maximum actual value exceeded

Message value: Component number: %1, encoder data set: %2, drive data set: %3
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When the position tracking of the load gear is configured, the drive/encoder (motor encoder) identifies a maximum possible absolute position actual value (r2723) that can no longer be represented within 32 bits.
Maximum value: \( p0408 \times p2721 \times 2^p0419 \)
Fault value (r0949, interpret hexadecimal):
ccbbaa hex
aa = encoder data set
bb = component number
cc = drive data set
See also: p0408 (Rotary encoder pulse No.), p0419 (Fine resolution absolute value Gx_XIST2 (in bits)), p2721 (Load gear, rotary absolute encoder, revolutions, virtual)

Remedy:
- reduce the fine resolution (p0419).
- reduce the multiturn resolution (p2721).
See also: p0419 (Fine resolution absolute value Gx_XIST2 (in bits)), p2721 (Load gear, rotary absolute encoder, revolutions, virtual)

**F07448 (A)** Load gear: Position tracking, linear axis has exceeded the maximum range

**Message value:** -
**Drive object:** B_INF, ENC, VECTOR_G
**Reaction:**
Infeed: NONE
Vector: OFF1 (NONE, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY
**Cause:**
For a configured linear axis/no modulo axis, the currently effective motor encoder (encoder 1) has exceeded the maximum possible traversing range.
For the configured linear axis, the maximum traversing range is defined to be 64x (+/- 32x) of p0421. It should be read in p2721 and interpreted as the number of load revolutions.
Note:
Only the motor encoder in the currently effective drive data set is monitored here. The actual effective drive data set is displayed in x = r0051 and the corresponding motor encoder is specified in in p0187[x].

**Remedy:**
The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

**F07449 (A)** Load gear: Position tracking, actual position outside tolerance window

**Message value:** %1
**Drive object:** B_INF, ENC, VECTOR_G
**Reaction:**
Infeed: NONE
Vector: OFF1 (NONE, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY
**Cause:**
When powered down, the currently effective motor encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.
Note:
Only the motor encoder in the currently effective drive data set is monitored here. The actual effective drive data set is displayed in x = r0051 and the corresponding motor encoder is specified in in p0187[x].
Fault value (r0949, interpret decimal):
Deviation (difference) to the last encoder position in increments of the absolute value after the measuring gear - if one is being used. The sign designates the traversing direction.
Note:
The deviation (difference) found is also displayed in r2724.
See also: p2722 (Load gear, position tracking tolerance window), r2724 (Load gear position difference)

**Remedy:**
Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset position tracking, position (p2720.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).
See also: p0010

**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
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<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07450 (A)</td>
<td>LR: Standstill monitoring has responded</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF1 (OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>After the standstill monitoring time (p2543) expired, the drive left the standstill window (p2542).&lt;br&gt;- position actual value inversion incorrectly set (p0410).&lt;br&gt;- standstill window set too small (p2542).&lt;br&gt;- standstill monitoring time set too low (p2543).&lt;br&gt;- position loop gain too low (p2538).&lt;br&gt;- position loop gain too high (instability/oscillation, p2538).&lt;br&gt;- mechanical overload.&lt;br&gt;- Connecting cable, motor/drive converter incorrect (phase missing, interchanged).&lt;br&gt;- when selecting motor identification, select tracking mode (BI: p2655[0] = 1 signal).&lt;br&gt;- when selecting function generator, select tracking mode (BI: p2655[0] = 1 signal) and de-activate position control (BI:p2550 = 0 signal).</td>
<td>Check the causes and resolve.</td>
</tr>
<tr>
<td>F07451 (A)</td>
<td>LR: Position monitoring has responded</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF1 (OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>When the position monitoring time (p2545) expired, the drive had still not reached the positioning window (p2544).&lt;br&gt;- positioning window parameterized too small (p2544).&lt;br&gt;- position monitoring time parameterized too short (p2545).&lt;br&gt;- position loop gain too low (p2538).&lt;br&gt;- position loop gain too high (instability/oscillation, p2538).&lt;br&gt;- drive mechanically locked.</td>
<td>Check the causes and resolve.</td>
</tr>
<tr>
<td>F07452 (A)</td>
<td>LR: Following error too high</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF1 (OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>The difference between the position setpoint position actual value (following error dynamic model, r2563) is greater than the tolerance (p2546).&lt;br&gt;- the drive torque or accelerating capacity exceeded.&lt;br&gt;- position measuring system fault.&lt;br&gt;- position control sense incorrect.&lt;br&gt;- mechanical system locked.&lt;br&gt;- excessively high traversing velocity or excessively high position reference value (setpoint) differences</td>
<td>Check the causes and resolve.</td>
</tr>
<tr>
<td>F07453</td>
<td>LR: Position actual value preprocessing error</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF1 (OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>An error has occurred during the position actual value preprocessing.</td>
<td></td>
</tr>
</tbody>
</table>
List of faults and alarms

A07454  LR: Position actual value preprocessing does not have a valid encoder

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: One of the following problems has occurred with the position actual value preprocessing:
- an encoder is not assigned for the position actual value preprocessing (p2502 = 0).
- an encoder is assigned, but no encoder data set (p0187 = 99 or p0188 = 99 or p0189 = 99).
- an encoder an an encoder data set have been assigned, however, the encoder data set does not contain any
  encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).
Remedy: Check the encoder for the position actual value preprocessing.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189
  (Encoder 3 encoder data set number), p0400 (Encoder type selection)

A07455  EPOS: Maximum velocity limited

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The maximum velocity (p2571) is too high to correctly calculate the modulo correction.
Within the sampling time for positioning (p0115[5]), with the maximum velocity, a maximum of the half modulo length
must be moved through. p2571 was limited to this value.
Remedy: - reduce the maximum velocity (p2571).
- increase the sampling time for positioning (p0115[5]).

A07456  EPOS: Setpoint velocity limited

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The actual setpoint velocity is greater than the parameterized maximum velocity (p2571) and is therefore limited.
Remedy: - check the entered setpoint velocity.
- reduce the velocity override (CI: p2646).
- increase the maximum velocity (p2571).
- check the signal source for the externally limited velocity (CI: p2594).

A07457  EPOS: Combination of input signals illegal

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An illegal combination of input signals that are simultaneously set was identified.
Alarm value (r2124, interpret decimal):
0: Jog 1 and jog 2 (p2589, p2590).
1: Jog 1 or jog 2 and direct setpoint input/MDI (p2589, p2590, p2647).
2: Jog 1 or jog 2 and start referencing (p2589, p2590, p2595).
3: Jog 1 or jog 2 and activate traversing task (p2589, p2590, p2631).
4: Direct setpoint input/MDI and starting referencing (p2647, p2595).
5: Direct setpoint input/MDI and activate traversing task (p2647, p2631).
6: Start referencing and activate traversing task (p2595, p2631).
Remedy: Check the appropriate input signals and correct.
Faults and alarms

List of faults and alarms

F07458 EPOS: Reference cam not found
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: After starting the search for reference, the axis moved through the maximum permissible distance to search for the reference cam without actually finding the reference cam.
Remedy:
- check the "reference cam" binector input (Bl: p2612).
- check the maximum permissible distance to the reference cam (p2606).
- if axis does not have any reference cam, then set p2607 to 0.

F07459 EPOS: No zero mark
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: After leaving the reference cam, the axis has traversed the maximum permissible distance between the reference cam and zero mark without finding the zero mark.
Remedy:
- check the encoder regarding the zero mark
- check the maximum permissible distance between the reference cam and zero mark (p2609).
- use an external encoder zero mark (equivalent zero mark) (p0495).
See also: p0495 (Equivalent zero mark, input terminal)

F07460 EPOS: End of reference cam not found
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: During the search for reference, when the axis reached the zero mark it also reached the end of the traversing range without detecting an edge at the binector input "reference cam" (Bl: p2612).
Maximum traversing range: -2147483648 [LU] ... -2147483647 [LU]
Remedy:
- check the "reference cam" binector input (Bl: p2612).
- repeat the search for reference.

A07461 EPOS: Reference point not set
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When starting a traversing block/direct setpoint input, a reference point is not set (r2684.11 = 0).
Remedy: Reference the system (search for reference, flying referencing, set reference point).

A07462 EPOS: Selected traversing block number does not exist
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
A traversing block selected via Bl: p2625 to Bl: p2630 was started via Bl: p2631 = 0/1 edge "Activate traversing task".
- the number of the started traversing block is not contained in p2616[0...n].
- the started traversing block is suppressed.
Alarm value (r2124, interpret decimal):
Number of the selected traversing block that is also not available.
Remedy:
- correct the traversing program.
- select an available traversing block number.
### A07463 (F) EPOS: External block change not requested in the traversing block

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | For a traversing block with the block change enable CONTINUE_EXTERNAL_ALARM, the external block change was not requested. Alarm value (r2124, interpret decimal): Number of the traversing block. |
| Remedy: | Resolve the reason as to why the edge is missing at binector input (BI: p2632). |
| Reaction upon F: | OFF1 |
| Acknowl. upon F: | IMMEDIATELY |

### F07464 EPOS: Traversing block is inconsistent

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | OFF1 (OFF2, OFF3) |
| Acknowledge: | IMMEDIATELY |
| Cause: | The traversing block does not contain valid information. Alarm value (r2124, interpret decimal): Number of the traversing block with invalid information. |
| Remedy: | Check the traversing block and where relevant, take into consideration alarms that are present. |

### A07465 EPOS: Traversing block does not have a subsequent block

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | There is no subsequent block in the traversing block. Alarm value (r2124, interpret decimal): Number of the traversing block with the missing subsequent block. |
| Remedy: | - parameterize this traversing block with the block change enable END. - parameterize additional traversing blocks with a higher block number and for the last block, using the block change enable END. |

### A07466 EPOS: Traversing block number assigned a multiple number of times

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The same traversing block number was assigned a multiple number of times. Alarm value (r2124, interpret decimal): Number of the traversing block that was assigned a multiple number of times. |
| Remedy: | Correct the traversing blocks. |

### A07467 EPOS: Traversing block has illegal task parameters

<p>| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The task parameter in the traversing block contains an illegal value. Alarm value (r2124, interpret decimal): Number of the traversing block with an illegal task parameter. |
| Remedy: | Correct the task parameter in the traversing block. |</p>
<table>
<thead>
<tr>
<th>Fault Code</th>
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<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A07468</td>
<td>EPOS: Traversing block jump destination does not exist</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>In a traversing block, a jump was programmed to a non-existent block.</td>
<td>- correct the traversing block.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Alert value (r2124, interpret decimal):</td>
<td>- add the missing traversing block.</td>
</tr>
<tr>
<td>A07469</td>
<td>EPOS: Traversing block &lt; target position &lt; software limit switch minus</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>In the traversing block the specified absolute target position lies outside the range</td>
<td>- correct the traversing block.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>limited by the software limit switch minus.</td>
<td>- change software limit switch minus (CI: p2578, p2580).</td>
</tr>
<tr>
<td>A07470</td>
<td>EPOS: Traversing block &gt; target position &gt; software limit switch plus</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>In the traversing block the specified absolute target position lies outside the range</td>
<td>- correct the traversing block.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>limited by the software limit switch plus.</td>
<td>- change software limit switch plus (CI: p2579, p2581).</td>
</tr>
<tr>
<td>A07471</td>
<td>EPOS: Traversing block target position outside the modulo range</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>In the traversing block the target position lies outside the modulo range.</td>
<td>- in the traversing block, correct the target position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
<td>- change the modulo range (p2576).</td>
</tr>
<tr>
<td>A07472</td>
<td>EPOS: Traversing block ABS_POS/ABS_NEG not possible</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>In the traversing block the positioning mode ABS_POS or ABS_NEG were parameterized</td>
<td>Correct the traversing block.</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>with the modulo correction not activated.</td>
<td></td>
</tr>
</tbody>
</table>
A07473 (F) EPOS: Beginning of traversing range reached
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the positive direction.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07474 (F) EPOS: End of traversing range reached
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When traversing, the axis has moved to the traversing range limit.
Remedy: Move away in the negative direction.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F07475 (A) EPOS: Target position < start of traversing range
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The target position for relative traversing lies outside the traversing range.
Remedy: Correct the target position.
Reaction upon A: NONE
Acknowl. upon A: NONE

F07476 (A) EPOS: Target position > end of the traversing range
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The target position for relative traversing lies outside the traversing range.
Remedy: Correct the target position.
Reaction upon A: NONE
Acknowl. upon A: NONE

A07477 (F) EPOS: Target position < software limit switch minus
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: In the actual traversing operation, the target position is less than the software limit switch minus.
Remedy: - correct the target position.
- change software limit switch minus (CI: p2578, p2580).
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
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List of faults and alarms

A07478 (F) EPOS: Target position > software limit switch plus
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: In the actual traversing operation, the target position is greater than the software limit switch plus.
Remedy: - correct the target position.
- change software limit switch plus (CI: p2579, p2581).
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07479 EPOS: Software limit switch minus reached
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The axis is at the position of the software limit switch minus. An active traversing block was interrupted.
Remedy: - correct the target position.
- change software limit switch minus (CI: p2578, p2580).

A07480 EPOS: Software limit switch plus reached
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The axis is at the position of the software limit switch plus. An active traversing block was interrupted.
Remedy: - correct the target position.
- change software limit switch plus (CI: p2579, p2581).

F07481 (A) EPOS: Axis position < software limit switch minus
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The actual position of the axis is less than the position of the software limit switch minus.
Remedy: - correct the target position.
- change software limit switch minus (CI: p2578, p2580).
Reaction upon A: NONE
Acknowl. upon A: NONE

F07482 (A) EPOS: Axis position > software limit switch plus
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The actual position of the axis is greater than the position of the software limit switch plus.
Remedy: - correct the target position.
- change software limit switch plus (CI: p2579, p2581).
Reaction upon A: NONE
Acknowl. upon A: NONE
<table>
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<th>Description</th>
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<tr>
<td>A07483</td>
<td><strong>EPOS: Travel to fixed stop clamping torque not reached</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> The fixed stop in the traversing block was reached without the clamping torque/clamping force having been achieved.</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> - check the maximum torque-generating current (r1533). - check the torque limits (p1520, p1521). - check the power limits (p1530, p1531). - check the BICO interconnections of the torque limits (p1522, p1523, p1528, p1529).</td>
</tr>
<tr>
<td>F07484</td>
<td><strong>EPOS: Fixed stop outside the monitoring window</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> OFF3 (OFF1, OFF2)</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> IMMEDIATELY</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> In the &quot;fixed stop reached&quot; state, the axis has moved outside the defined monitoring window (p2635).</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> - check the monitoring window (p2635). - check the mechanical system.</td>
</tr>
<tr>
<td>F07485 (A)</td>
<td><strong>EPOS: Fixed stop not reached</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> OFF1 (OFF2, OFF3)</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> IMMEDIATELY</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> In a traversing block with the task FIXED STOP, the end position was reached without detecting a fixed stop.</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> - check the traversing block and locate the target position further into the workpiece. - check the &quot;fixed stop reached&quot; control signal (p2637). - if required, reduce the maximum following error window to detect the fixed stop (p2634).</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction upon A:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowl. upon A:</strong> NONE</td>
</tr>
<tr>
<td>A07486</td>
<td><strong>EPOS: Intermediate stop missing</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> In the modes &quot;traversing blocks&quot; or &quot;direct setpoint input/MDI&quot; at the start of motion, the binector input &quot;no intermediate stop/intermediate stop&quot; (BI: p2640) did not have a 1 signal.</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> Connect a 1 signal to the binector input &quot;no intermediate stop/intermediate stop&quot; (BI: p2640) and re-start motion.</td>
</tr>
<tr>
<td>A07487</td>
<td><strong>EPOS: Reject traversing task missing</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> VECTOR_G</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> NONE</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> In the modes &quot;traversing blocks&quot; or &quot;direct setpoint input/MDI&quot; at the start of motion, the binector input &quot;do not reject traversing task/reject traversing task&quot; (BI: p2641) does not have a 1 signal.</td>
</tr>
<tr>
<td></td>
<td><strong>Remedy:</strong> Connect a 1 signal to the binector input &quot;do not reject traversing task/reject traversing task&quot; (BI: p2641) and restart motion.</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

F07488  EPOS: Relative positioning not possible
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  In the mode "direct setpoint input/MDI", for continuous transfer (p2649 = 1) relative positioning was selected (BI: p2648 = 0 signal).
Remedy:  Check the control.

A07489  EPOS: Reference point correction outside the window
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  For the function "flying referencing" the difference between the measured position at the measuring probe and the reference point coordinate lies outside the parameterized window.
Remedy:  - check the mechanical system.
- check the parameterization of the window (p2602).

F07490  EPOS: Enable signal withdrawn while traversing
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  - for a standard assignment, another fault may have occurred as a result of withdrawing the enable signals.
- the drive is in the "switching on inhibited" state (for a standard assignment).
Remedy:  - set the enable signals or check the cause of the fault that first occurred and then result (for a standard assignment).
- check the assignment to enable the basic positioning function.

F07491 (A)  EPOS: STOP cam minus reached
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF3
Acknowledge:  IMMEDIATELY
Cause:  A 0 signal was detected at binector input BI: p2569, i.e. the STOP cam minus was reached.
For a positive traversing direction, the STOP cam minus was reached - i.e. the wiring of the STOP cam is incorrect.
Remedy:  - leave the STOP cam minus in the positive traversing direction and return the axis to the valid traversing range.
- check the wiring of the STOP cam.
Reaction upon A:  NONE
Acknowl. upon A:  NONE

F07492 (A)  EPOS: STOP cam plus reached
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF3
Acknowledge:  IMMEDIATELY
Cause:  A 0 signal was detected at binector input BI: p2570, i.e. the STOP cam plus was reached.
For a negative traversing direction, the STOP cam plus was reached - i.e. the wiring of the STOP cam is incorrect.
Remedy:  - leave the STOP cam plus in the negative traversing direction and return the axis to the valid traversing range.
- check the wiring of the STOP cam.
Reaction upon A:  NONE
Acknowl. upon A:  NONE
F07493  LR: Overflow of the value range for position actual value
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded. When the overflow occurs, the "referenced" or "adjustment absolute measuring system" status is reset.
Fault value (r0949, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Note:
For a linear encoder, the following must be maintained:
- \( p0407 \times p2503 / (2^p0418 \times 10^7) < 1 \)
- \( p0407 \times p2503 / (2^p0419 \times 10^7) < 1 \)
Remedy:  If required, reduce the traversing range or position resolution (p2506).
Increase the fine resolution of absolute position actual value (p0419).
Note for fault value = 3:
If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.
For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:
1. Motor encoder without position tracking
   \( p2506 \times p0433 \times p2505 / (p0432 \times p2504) \)
   \( p2506 \times p0433 \times p2505 \times p421 / (p0432 \times p2504) \) for multiturn encoders
2. Motor encoder with position tracking for measuring gear:
   \( p2506 \times p0412 \times p2505 / p2504 \)
3. Motor encoder with position tracking for load gear
   \( p2506 \times p2721 \times p0433 / p0432 \)
4. Motor encoder with position tracking for load and measuring gear
   \( p2506 \times p2721 \)
5. Direct encoder without position tracking
   \( p2506 \times p0433 / p0432 \)
   \( p2506 \times p0433 \times p0421 / p0432 \) for multiturn encoders
6. Direct encoder with position tracking for measuring gear
   \( p2506 \times p0412 \)

F07494  LR: Drive Data Set changeover in operation
Message value:  
Drive object:  VECTOR_G
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge:  IMMEDIATELY
Cause:  A Drive Data Set changeover (DDS) with a change of the mechanical relationships (p2503 ... 2506), direction of rotation (p1821) or the encoder assignment (p2502) was requested in operation.
Note:
DDS: Drive Data Set
Remedy:  To changeover the drive data set, initially exit the "operation" mode.

A07495 (F)  LR: Reference function interrupted
Message value:  
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  An activated reference function (reference mark search or measuring probe evaluation) was interrupted.
- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
Faults and alarms

List of faults and alarms

- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was de-activated (BI: p2508 and BI: p2509 = 0 signal).

Remedy:
- check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07496 EPOS: Enable not possible
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to enable the basic positioner because at least one signal is missing.
Alarm value (r2124, interpret decimal):
1: EPOS enable missing (BI: p2656).
2: Position actual value, valid feedback signal missing (BI: p2658).
Remedy: Check the appropriate binector inputs and signals.

A07497 LR: Position setting value activated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position actual value is set to the value received via CI: p2515while BI: p2514 = 1 signal. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm automatically disappears with BI: p2514 = 0 signal.

A07498 (F) LR: Measuring probe evaluation not possible
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the measuring probe, an error occurred.
Alarm value (r2124, interpret decimal):
6: The input terminal for the measuring probe is not set.
4098: Error when initializing the measuring probe.
4100: The measuring pulse frequency is too high.
> 50000: The measuring clock cycle is not a multiple integer of the position controller clock cycle.
Remedy: De-activate the measuring probe evaluation (BI: p2509 = 0 signal).
Re alarm value = 6:
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
Re alarm value = 4098:
Check the Control Unit hardware.
Re alarm value = 4100:
Reduce the frequency of the measuring pulses at the measuring probe.
Re alarm value > 50000:
Set the clock cycle ratio of the measuring clock cycle to the position controller clock cycle to an integer multiple.
To do this, the currently effective measuring clock cycle can be determined from the alarm value as follows:
Tmeas [125 µs] = alarm value - 50000
With PROFIBUS, the measuring clock cycle corresponds to the PROFIBUS clock cycle (r2064[1]).
Without PROFIBUS, the measuring clock cycle is an internal cycle time that cannot be influenced.

Reaction upon F: OFF1
Acknowl. upon F: IMMEDIATELY
### F07499 (A) EPOS: Reversing cam approached with the incorrect traversing direction

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF3  
**Acknowledge:** IMMEDIATELY  
**Cause:** The reversing cam MINUS was approached in the positive traversing direction or the reversing cam PLUS was approached in the negative traversing direction.  
**Remedy:** - check the wiring of the reversing cam (Bl: p2613, Bl: p2614).  
- check the traversing direction to approach the reversing cam.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F07500 Drive: Power unit data set PDS not configured

**Message value:** Drive data set: %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** Only for controlled line supply infeed/regenerative feedback units: The power unit data set was not configured - this means that a data set number was not entered into the drive data set.  
Fault value (r0949, interpret decimal): Drive data set number of p0185.  
**Remedy:** The index of the power unit data set associated with the drive data set should be entered into p0185.

### F07501 Drive: Motor Data Set MDS not configured

**Message value:** Drive data set: %1  
**Drive object:** All objects  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** Only for power units: The motor data set was not configured - this means that a data set number was not entered into the associated drive data set.  
Fault value (r0949, interpret decimal): The fault value includes the drive data set number of p0186.  
**Remedy:** The index of the motor data set associated with the drive data set should be entered into p0186.  
See also: p0186 (Motor Data Sets (MDS) number)

### F07502 Drive: Encoder Data Set EDS not configured

**Message value:** Drive data set: %1  
**Drive object:** All objects  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** Only for power units: The encoder data set was not configured - this means that a data set number was not entered into the associated drive data set.  
Fault value (r0949, interpret decimal): The fault value includes the drive data set number of p0187, p0188 and p0189.  
The fault value is increased by 100 * encoder number (e.g. for p0189: Fault value 3xx with xx = data set number).  
**Remedy:** The index of the encoder data set associated with the drive data set should be entered into p0187 (1st encoder), p0188 (2nd encoder) and p0189 (3rd encoder).
## F07503  EPOS: STOP cam approached with the incorrect traversing direction

- **Message value**: %1
- **Drive object**: VECTOR_G
- **Reaction**: NONE
- **Acknowledge**: IMMEDIATELY
- **Cause**: The STOP cam MINUS was approached in the positive traversing direction or the STOP cam PLUS was approached in the negative traversing direction.
- **Remedy**: 
  - check the wiring of the STOP cam (Bl: p2569, Bl: p2570).
  - check the traversing direction to approach the STOP cam.

## A07504  Drive: Motor data set is not assigned to a drive data set

- **Message value**: %1
- **Drive object**: B_INF, ENC, VECTOR_G
- **Reaction**: NONE
- **Acknowledge**: NONE
- **Cause**: A motor data set is not assigned to a drive object. All of the existing motor data sets in the drive data sets must be assigned using the MDS number (p0186[0...n]). There must be at least as many drive data sets as motor data sets.
- **Alarm value (r2124, interpret decimal)**: Number of the motor data set that has not been assigned.
- **Remedy**: 
  - check the wiring of the STOP cam (Bl: p2569, Bl: p2570).
  - check the traversing direction to approach the STOP cam.

## A07505  EPOS: Task fixed stop not possible in the U/f/SLVC mode

- **Message value**: %1
- **Drive object**: VECTOR_G
- **Reaction**: NONE
- **Acknowledge**: NONE
- **Cause**: In the U/f/SLVC mode, an attempt was made to execute a traversing block with the "fixed stop" task. This is not possible.
- **Alarm value (r2124, interpret decimal)**: Number of the traversing block with an illegal task parameter.
- **Remedy**: 
  - check the wiring of the STOP cam (Bl: p2569, Bl: p2570).
  - check the traversing direction to approach the STOP cam.
  - change the open-loop/closed-loop control mode (p1300).

## F07509  Drive: Component number missing

- **Message value**: %1
- **Drive object**: B_INF, ENC, VECTOR_G
- **Reaction**: OFF2
- **Acknowledge**: IMMEDIATELY
- **Cause**: A Drive Data Set (DDS) is assigned to a Motor Data Set (MDS) or Encoder Data Set (EDS) that does not have a component number.
- **Alarm value (r2124, interpret decimal)**: nnnnnnmmmxxxyyy
  - nn: Number of the MDS/EDS.
  - mmm: Parameter number of the missing component number.
  - xx: Number of the DDS that is assigned to the MDS/EDS.
  - yyy: Parameter number that references the MDS/EDS.
- **Example**: 
  - p0131[5] = 0: There is no component number set in MDS 5.
  - Alarm value = 0513107186
Remedy: In the drive data sets, no longer assign MDS/EDS using p0186, p0187, p0188, p0189 or set a valid component number.
See also: p0131, p0141, p0142, p0186, p0187, p0188, p0189

F07510 Drive: Identical encoder in the drive data set
Message value: %1
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: More than one encoder with identical component number is assigned to a single drive data set. In one drive data set, it is not permissible that identical encoders are operated together.
Fault value (r0949, interpret decimal):
1000 * first identical encoder + 100 * second identical encoder + drive data set.
Example:
Fault value = 1203 means:
In drive data set 3, the first (p0187[3]) and second encoder (p0188[3]) are identical.
Remedy: Assign the drive data set to different encoders.
See also: p0141 (Encoder interface (Sensor Module) component number), p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number)

F07511 Drive: Encoder used a multiple number of times
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: Each encoder may only be assigned to one drive and within a drive must - in each drive data set - either always be encoder 1, always encoder 2 or always encoder 3. This unique assignment has been violated.
Fault value (r0949, interpret decimal):
The two parameters in coded form, that refer to the same component number.
First parameter:
Index: First and second decimal place (99 for EDS, not assigned DDS)
Parameter number: Third decimal place (1 for p0187, 2 for p0188, 3 for p0189, 4 for EDS not assigned DDS)
Drive number: Fourth and fifth decimal place
Second parameter:
Index: Sixth and seventh decimal place (99 for EDS, not assigned DDS)
Parameter number: Eighth decimal place (1 for p0187, 2 for p0188, 3 for p0189, 4 for EDS, not assigned DDS)
Drive number: Ninth and tenth decimal place
See also: p0141 (Encoder interface (Sensor Module) component number)
Remedy: Correct the double use of a component number using the two parameters coded in the fault value.

F07512 Drive: Encoder data set changeover cannot be parameterized
Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Using p0141, a changeover of the encoder data set is prepared that is illegal. In this firmware release, an encoder data set changeover is only permitted for the components in the actual topology.
Alarm value (r2124, interpret decimal):
Incorrect EDS data set number.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number)
Remedy: Every encoder data set must be assigned its own dedicated DRIVE-CLiQ socket. The component numbers of the encoder interfaces (p0141) must have different values within a drive object.
The following must apply:
p0141[0] not equal to p0141[1] not equal to ... not equal to p0141[n]
A07514 (N)  Drive: Data structure does not correspond to the interface module

Message value:  -
Drive object:  B_INF, ENC, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The interface mode "SIMODRIVE 611 universal" was set (p2038 = 1) and the data structure does not correspond to this mode.
The following settings are possible, depending on the number of data sets:
Number of DDS/MDS (p0180/p0130): p0186
1/1: p0186[0] = 0
2/2: p0186[0] = 0, p0186[1] = 1
2/1: p0186[0, 1] = 0
4/2: p0186[0, 1] = 0, p0186[1, 2] = 1
8/4: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2 ... p0186[5, 6] = 3
16/8: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2 ... p0186[14, 15] = 7
32/16: p0186[0, 1] = 0, p0186[1, 2] = 1, p0186[3, 4] = 2 ... p0186[30, 31] = 15
4/1: p0186[0, 1, 2, 3] = 0
8/2: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1
16/4: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1, p0186[8, 9, 10, 11] = 2, p0186[12, 13, 14, 15] = 3
32/8: p0186[0, 1, 2, 3] = 0, p0186[4, 5, 6, 7] = 1, p0186[8, 9, 10, 11] = 2 ... p0186[28, 29, 30, 31] = 7
8/1: p0186[0,...,7] = 0
16/2: p0186[0,...,7] = 0, p0186[8...15] = 1
32/4: p0186[0,...,7] = 0, p0186[8...15] = 1, p0186[16...23] = 2, p0186[24...31] = 3
16/1: p0186[0,...,15] = 0
32/2: p0186[0,...,15] = 0, p0186[16...31] = 1
32/1: p0186[0,...,31] = 0
9/2: p0186[0,...,7] = 0, p0186[8] = 1
10/2: p0186[0,...,7] = 0, p0186[8, 9] = 1
12/2: p0186[0,...,7] = 0, p0186[8...11] = 1
See also: p0180 (Number of Drive Data Sets (DDS)), p0186 (Motor Data Sets (MDS) number), p2038 (IF1 PROFIdrive STW/ZSW interface mode)

Remedy:  - Check the data structure according to the possible settings mentioned in the cause.
- check the interface mode (p2038).
Reaction upon N:  NONE
Acknowl. upon N:  NONE

F07515  Drive: Power unit and motor incorrectly connected

Message value:  %1
Drive object:  B_INF, ENC, VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY
Cause:  A power unit (via PDS) was assigned to a motor (via MDS) in a drive data set that is not connected in the target topology. It is possible that a motor has not been assigned to the power unit (p0131).
Fault value (r0949, interpret decimal):
Number of the incorrectly parameterized drive data set.

Remedy:  - assign the drive data set to a combination of motor and power unit permitted by the target topology.
- adapt the target topology.
- If required, for a missing motor, recreate the component (drive Wizard).
See also: p0121 (Power unit component number), p0131 (Motor component number), p0186 (Motor Data Sets (MDS) number)
F07516  Drive: Re-commission the data set  
Message value: %1  
Drive object: B_INF, ENC, VECTOR_G  
Reaction: NONE  
Acknowledge: IMMEDIATELY  
Cause: The assignment between the drive data set and motor data set (p0186) or between the drive data set and the encoder data set was modified (p0187). This is the reason that the drive data set must re-commissioned.  
Fault value (r0949, interpret decimal): Drive data set to be re-commissioned.  
Remedy: Commission the drive data set specified in the fault value (r0949).

F07517  Drive: Encoder data set changeover incorrectly parameterized  
Message value: %1  
Drive object: B_INF, ENC, VECTOR_G  
Reaction: OFF2  
Acknowledge: IMMEDIATELY  
Cause: An MDS cannot have different motor encoders in two different DDS.  
The following parameterization therefore results results in an error:  
p0186[0] = 0, p0187[0] = 0  
p0186[0] = 0, p0187[0] = 1  
Alarm value (r2124, interpret decimal): The lower 16 bits indicate the first DDS and the upper 16 bits indicate the second DDS.  
Remedy: If you wish to operate a motor once with one motor encoder and then another time with the other motor encoder, then you must set up two different MDSs, in which the motor data are the same.  
Example:  
p0186[0] = 0, p0187[0] = 0  
p0186[0] = 1, p0187[0] = 1

F07518  Drive: Motor data set changeover incorrectly parameterized  
Message value: %1  
Drive object: B_INF, ENC, VECTOR_G  
Reaction: NONE  
Acknowledge: IMMEDIATELY  
Cause: The system has identified that two motor data sets were incorrectly parameterized.  
Parameter r0313 (calculated from p0314, p0310, p0311), r0315 and p1982 may only have different values if the motor data sets are assigned different motors. p0827 is used to assign the motors and/contactors.  
It is not possible to toggle between motor data sets.  
Alarm value (r2124, interpret hexadecimal): xxxxyyyy:  
xxx: First DDS with assigned MDS, yyyy: Second DDS with assigned MDS  
Remedy: Correct the parameterization of the motor data sets.

A07519  Drive: Motor changeover incorrectly parameterized  
Message value: %1  
Drive object: VECTOR_G  
Reaction: NONE  
Acknowledge: NONE  
Cause: With the setting p0833.0 = 1, a motor changeover via the application is selected. This is the reason that p0827 must have different values in the appropriate motor data set.  
Alarm value (r2124, interpret hexadecimal): xxxxyyyy:  
xxx: First MDS, yyyy: Second MDS  
Remedy: - parameterize the appropriate motor data sets differently (p0827).  
- select the setting p0833.0 = 0 (motor changeover via the drive).
Faults and alarms

List of faults and alarms

A07520  Drive: Motor cannot be changed over
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The motor cannot be changed over.
Alarm value (r2124, interpret decimal):
1: The contactor for the motor that is presently active cannot be opened, because for a synchronous motor, the speed (r0063) is greater than the speed at the start of field weakening (p3048). As long as r0063 > p0348, the current in the motor does not decay in spite of the pulses being suppressed.
2: The "contactor opened" feedback signal was not detected within 1 s.
3: The "contactor closed" feedback signal was not detected within 1 s.
Remedy: Re alarm value = 1:
- Set the speed lower than the speed at the start of field weakening (r0063 < p0348).
Re alarm value = 2, 3:
- Check the feedback signals of the contactor involved.

A07530  Drive: Drive Data Set DDS not present
Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The selected drive data set is not available (p0837 > p0180). The drive data set was not changed over.
See also: p0180, p0820, p0821, p0822, p0823, p0824, r0837
Remedy:
- select the existing drive data set.
- set up additional drive data sets.

A07531  Drive: Command Data Set CDS not present
Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The selected command data set is not available (p0836 > p0170). The command data set was not changed over.
See also: p0810 (Command data set selection CDS bit 0), p0811 (Command data set selection CDS bit 1), r0836 (Command Data Set CDS selected)
Remedy:
- select the existing command data set.
- set up additional command data sets.

A07541  Drive: Data set changeover not possible
Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The selected drive data set changeover and the assigned motor changeover are not possible and are not carried out.
For synchronous motors, the motor contactor may only be switched for actual speeds less than the speed at the start of field weakening (r0063 < p0348).
See also: r0063 (Speed actual value)
Remedy: Reduce the speed below the speed at the start of field weakening.
### List of faults and alarms

#### A07550 (F, N) Drive: Not possible to reset encoder parameters

**Message value:** %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
When carrying out a factory setting (e.g. using p0970 = 1), it was not possible to reset the encoder parameters. The encoder parameters are directly read out of the encoder via DRIVE-CLiQ.  
Alarm value (r2124, interpret decimal):  
Component number of the encoder involved.  
**Remedy:**  
- repeat the operation.  
- check the DRIVE-CLiQ connection.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  

#### F07551 Drive encoder: No commutation angle information

**Message value:** Fault cause: %1, drive data set: %2  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (IASC/DCBRAKE)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:**  
The commutation angle information is missing. This means that synchronous motors cannot be controlled (closed-loop control)  
Fault value (r0949, interpret decimal):  
yyyyxxxx dec: yyyy = fault cause, xxxx = drive data set  
yyyy = 1 dec:  
The motor encoder used does not supply an absolute commutation angle.  
yyyy = 2 dec:  
The selected ratio of the measuring gear does not match the motor pole pair number.  
**Remedy:**  
Re fault cause = 1:  
- check the encoder parameterization (p0404).  
- use an encoder with track C/D, EnDat interface of Hall sensors.  
- use an encoder with sinusoidal A/B track for which the motor pole pair number (r0313) is an integer multiple of the encoder pulse number (p0408).  
- activate the pole position identification routine (p1982 = 1).  
Re fault cause = 2:  
- the quotient of the pole pair number divided by the ratio of the measuring gear must be an integer number: (p0314 * p0433) / p0432.  
Note:  
For operation with track C/D, this quotient must be less than 8.  
See also: p0402 (Gearbox type selection), p0404 (Encoder configuration effective), p0432 (Gearbox factor, encoder revolutions), p0433 (Gearbox factor, motor/load revolutions)  

#### F07552 (A) Drive encoder: Encoder configuration not supported

**Message value:** Fault cause: %1, component number: %2, encoder data set: %3  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:**  
The requested encoder configuration is not supported. Only bits may be requested in p0404 that are signaled as being supported by the encoder evaluation in r0456.  
Fault value (r0949, interpret decimal):  
ccccbbaa hex: cccc = fault cause, bb = component number, aa = encoder data set  
cccc = 1: encoder sin/cos with absolute track (is supported by SME25).  
cccc = 3: Squarewave encoder (this is supported by SMC30).  
cccc = 4: sin/cos encoder (this is supported by SMC20, SI20, SMI20, SME20, SME25).  
cccc = 10: DRIVE-CLiQ encoder (is supported by DQI).
Faults and alarms

List of faults and alarms

cccc = 12: sin/cos encoder with reference mark (this is supported by SME20).
cccc = 15: Commutation with zero mark for separately-excited synchronous motors with VECTORMV.
cccc = 23: Resolver (this is supported by SMC10, SM16).
cccc = 65535: Other function (compare r0456 and p0404).

See also: p0404 (Encoder configuration effective), r0456 (Encoder configuration supported)

Remedy:
- check the encoder parameterization (p0400, p0404).
- use the matching encoder evaluation (r0456).

Reaction upon A: NONE
Acknowl. upon A: NONE

F07553 (A)  Drive encoder: Sensor Module configuration not supported
Message value:
Encoder data set: %1, first incorrect bit: %2, incorrect parameter: %3

Drive object:
B_INF, ENC, VECTOR_G

Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)

Acknowledge:
IMMEDIATELY (POWER ON)

Cause:
The Sensor Module does not support the requested configuration.
For incorrect p0430 (cc = 0), the following applies:
- In p0430 (requested functions), at least 1 bit was set that is not set in r0458 (supported functions) (exception: Bit 19, 28, 29, 30, 31).
- p1982 > 0 (pole position identification requested), but r0458.16 = 0 (pole position identification not supported).
For incorrect p0437 (cc = 1), the following applies:
- In p0437 (requested functions), at least 1 bit was set that is not set in r0459 (supported functions).
Fault value (r0949, interpret hexadecimal):

ddccbbaa hex
aa: encoder data set number
bb: first incorrect bit
cc: incorrect parameter
cc = 0: incorrect parameter is p0430
cc = 1: incorrect parameter is p0437
cc = 2: incorrect parameter is r0459
dd: reserved (always 0)

Remedy:
- check the encoder parameterization (p0430, p0437).
- use the matching encoder evaluation (r0458, r0459).

See also: p0430, p0437, r0458, r0459, p1982

Reaction upon A: NONE
Acknowl. upon A: NONE

F07555 (A)  Drive encoder: Configuration position tracking
Message value:
Component number: %1, encoder data set: %2, drive data set: %3, fault cause: %4

Drive object:
B_INF, ENC, VECTOR_G

Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)

Acknowledge:
IMMEDIATELY (POWER ON)

Cause:
For position tracking, the configuration is not supported.
Position tracking can only be activated for absolute encoders.
For linear axes, it is not possible to simultaneously activate the position tracking for load and measuring gears.
Fault value (r0949, interpret hexadecimal):

ddccbbaa hex
aa: encoder data set number
bb: component number
cc: drive data set number
dd = fault cause
dd = 00 hex = 0 dec
An absolute encoder is not being used.
dd = 01 hex = 1 dec
Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a Control Unit does not have an NVRAM.
dd = 02 hex = 2 dec
For a linear axis, the position tracking was activated for the load and measuring gear.
dd = 03 hex = 3 dec
Position tracking cannot be activated because position tracking with another gear ratio, axis type or tolerance window
has already been detected for this encoder data set.
dd = 04 hex = 4 dec
A linear encoder is being used.
See also: p0404 (Encoder configuration effective), p0411 (Measuring gear, configuration)

Remedy:
- use an absolute encoder.
- if necessary, de-select the position tracking (p0411 for the measuring gear, p2720 for the load gear).
- use a Control Unit with sufficient NVRAM.
- Only activate position tracking of the load gear in the same encoder data set if the gear ratio (p2504, p2505), axis
type (p2720.1) and tolerance window (p2722) are also the same.

F07556 Measuring gear: Position tracking, maximum actual value exceeded
Message value: Component number: %1, encoder data set: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY

Cause:
When the position tracking of the measuring gear is configured, the drive/encoder identifies a maximum possible
absolute position actual value (r0483) that cannot be represented within 32 bits.
Maximum value: p0408 * p0412 * 2^p0419
Fault value (r0949, interpret decimal):
aaaayyxx hex: yy = component number, xx = encoder data set
See also: p0408 (Rotary encoder pulse No.), p0412 (Measuring gear, absolute encoder, rotary, revolutions, virtual),
p0419 (Fine resolution absolute value Gx_XIST2 (in bits))

Remedy:
- reduce the fine resolution (p0419).
- reduce the multiturn resolution (p0412).
See also: p0412 (Measuring gear, absolute encoder, rotary, revolutions, virtual), p0419 (Fine resolution absolute
value Gx_XIST2 (in bits))

A07557 (F) Encoder 1: Reference point coordinate not in the permissible range
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause:
The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the
half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in
the supplementary information.

Remedy:
Set the reference point coordinate less than the value from the supplementary information.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07558 (F) Encoder 2: Reference point coordinate not in the permissible range
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause:
The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the
half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in
the supplementary information.

Remedy:
Set the reference point coordinate less than the value from the supplementary information.

Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
### A07559 (F) Encoder 3: Reference point coordinate not in the permissible range

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The reference point coordinate received when adjusting the encoder via connector input CI:p2599 lies outside the half of the encoder range and cannot be set as actual axis position. The maximum permissible value is displayed in the supplementary information.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Set the reference point coordinate less than the value from the supplementary information.</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>OFF1 (OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### F07560 Drive encoder: Number of pulses is not to the power of two

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Encoder data set: %1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infeed: OFF2 (NONE, OFF1)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>For rotary absolute encoders, the pulse number in p0408 must be to the power of two. Fault value (r0949, interpret decimal): The fault value includes the encoder data set number involved.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check the parameterization (p0408, p0404.1, r0458.5).</td>
</tr>
<tr>
<td></td>
<td>- upgrade the Sensor Module firmware if necessary</td>
</tr>
</tbody>
</table>

### F07561 Drive encoder: Number of multiturn pulses is not to the power of two

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Encoder data set: %1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infeed: OFF2 (NONE, OFF1)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>The multiturn resolution in p0421 must be to the power of two. Fault value (r0949, interpret decimal): The fault value includes the encoder data set number involved.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check the parameterization (p0421, p0404.1, r0458.5).</td>
</tr>
<tr>
<td></td>
<td>- upgrade the Sensor Module firmware if necessary</td>
</tr>
</tbody>
</table>

### F07562 (A) Drive, encoder: Position tracking, incremental encoder not possible

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1, component number: %2, encoder data set: %3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infeed: OFF2 (NONE, OFF1)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>The requested position tracking for incremental encoders is not supported. Fault value (r0949, interpret hexadecimal): cccccbaa hex</td>
</tr>
<tr>
<td></td>
<td>aa = encoder data set</td>
</tr>
<tr>
<td></td>
<td>bb = component number</td>
</tr>
<tr>
<td></td>
<td>cccc = fault cause</td>
</tr>
<tr>
<td></td>
<td>cccc = 00 hex = 0 dec</td>
</tr>
<tr>
<td></td>
<td>The encoder type does not support the &quot;Position tracking incremental encoder&quot; function.</td>
</tr>
<tr>
<td></td>
<td>cccc = 01 hex = 1 dec</td>
</tr>
<tr>
<td></td>
<td>Position tracking cannot be activated because the memory of the internal NVRAM is not sufficient or a Control Unit does not have an NVRAM.</td>
</tr>
<tr>
<td></td>
<td>cccc = 04 hex = 4 dec</td>
</tr>
<tr>
<td></td>
<td>A linear encoder is used that does not support the &quot;position tracking&quot; function.</td>
</tr>
<tr>
<td></td>
<td>See also: p0404 (Encoder configuration effective), p0411 (Measuring gear, configuration), r0456 (Encoder configuration supported)</td>
</tr>
</tbody>
</table>
### Faults and alarms

**List of faults and alarms**

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>A07565 (F, N)</td>
<td>Drive: Encoder error in PROFldrive encoder interface 1</td>
<td>%1</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>A07566 (F, N)</td>
<td>Drive: Encoder error in PROFldrive encoder interface 2</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### Remedy:
- check the encoder parameterization (p0400, p0404).
- use a Control Unit with sufficient NVRAM.
- if required, de-select position tracking for the incremental encoder (p0411.3 = 0).

### Cause:
An incorrect configuration was identified for the "Absolute position for incremental encoder" function.
Fault cause: 1 (= 01 hex):
The "Absolute value for incremental encoder" function is not supported (r0459.13 = 0).
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
yyxx dec: yy = fault cause, xx = encoder data set
See also: r0459 (Sensor Module properties extended), p4652 (XIST1_ERW reset mode)

### Remedy:
- upgrade the Sensor Module firmware version.
- check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).
- check the mode (p4652 = 1, 3 requires the property r0459.13 = 1).

### Cause:
An encoder error was signaled for encoder 1 via the PROFldrive encoder interface (G1_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G1_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if p0480[0] is not equal to zero.

### Remedy:
Acknowledge the encoder error using the encoder control word (G1_STW.15 = 1).

### Cause:
An encoder error was signaled for encoder 2 via the PROFldrive encoder interface (G2_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G2_XIST2, refer to the description regarding r0483.
Note:
This alarm is only output if p0480[1] is not equal to zero.

### Remedy:
Acknowledge the encoder error using the encoder control word (G2_STW.15 = 1).
Faults and alarms

List of faults and alarms

A07567 (F, N)  Drive: Encoder error in PROFIdrive encoder interface 3
Message value:  %1
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  An encoder error was signaled for encoder 3 via the PROFIdrive encoder interface (G3_ZSW.15).
Alarm value (r2124, interpret decimal):
Error code from G3_XIST2, refer to the description regarding r0483.
Note:  This alarm is only output if p0480[2] is not equal to zero.
Remedy:  Acknowledge the encoder error using the encoder control word (G3_STW.15 = 1).
Reaction upon F:  NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:  IMMEDIATELY
Reaction upon N:  NONE
Acknowl. upon N:  NONE

A07569 (F)  Encoder could not be identified
Message value:  -
Drive object:  B_INF, ENC, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  During encoder identification (waiting) with p0400 = 10100, the encoder could not be identified.
Either the wrong encoder has been installed or no encoder has been installed, the wrong encoder cable has been connected or no encoder cable has been connected to the Sensor Module, or the DRIVE-CLiQ component has not been connected to DRIVE-CLiQ.
Note:  Encoder identification must be supported by the encoder and is possible in the following cases:
- Encoder with EnDat interface
- Motor with DRIVE-CLiQ
Remedy:  - check and, if necessary, connect the encoder and/or encoder cable.
- check and, if necessary, establish the DRIVE-CLiQ connection.
- in the case of encoders that cannot be identified (e.g. encoders without EnDat interface), the correct encoder type must be entered in p0400.
Reaction upon F:  Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F:  IMMEDIATELY

F07575  Drive: Motor encoder not ready
Message value:  -
Drive object:  B_INF, ENC, VECTOR_G
Reaction:  Infeed: OFF2
Vector: OFF2 (ENCODER)
Acknowledge:  IMMEDIATELY
Cause:  The motor encoder signals that it is not ready.
- initialization of encoder 1 (motor encoder) was unsuccessful.
- the function "parking encoder" is active (encoder control word G1_STW.14 = 1).
- the encoder interface (Sensor Module) is de-activated (p0145).
- the Sensor Module is defective.
Remedy:  Evaluate other queued faults via encoder 1.
### A07576

**Drive: Encoderless operation due to a fault active**

| Message value | - |
| Drive object | VECTOR_G |
| Reaction | NONE |
| Acknowledge | NONE |
| Cause | Encoderless operation is active due to a fault (r1407.13 = 1).  
Note: The behavior for faults has been set to ENCODER fault response in p0491.  
See also: p0491 (Motor encoder fault response ENCODER) |
| Remedy | - remove the cause of a possible encoder fault.  
- carry out a POWER ON (power off/on) for all components. |

### A07577 (F)

**Encoder 1: Measuring probe evaluation not possible**

| Message value | %1 |
| Drive object | VECTOR_G |
| Reaction | NONE |
| Acknowledge | NONE |
| Cause | When evaluating the measuring probe, an error occurred.  
Alarm value (r2124, interpret decimal):  
6: The input terminal for the measuring probe is not set.  
4098: Error when initializing the measuring probe.  
4100: The measuring pulse frequency is too high.  
4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle. |
| Remedy | De-activate the measuring probe evaluation (BI: p2509 = 0 signal).  
Re alarm value = 6:  
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).  
Re alarm value = 4098:  
Check the Control Unit hardware.  
Re alarm value = 4100:  
Reduce the frequency of the measuring pulses at the measuring probe.  
Re alarm value = 4200:  
Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple. |

### A07578 (F)

**Encoder 2: Measuring probe evaluation not possible**

| Message value | %1 |
| Drive object | VECTOR_G |
| Reaction | NONE |
| Acknowledge | NONE |
| Cause | When evaluating the measuring probe, an error occurred.  
Alarm value (r2124, interpret decimal):  
6: The input terminal for the measuring probe is not set.  
4098: Error when initializing the measuring probe.  
4100: The measuring pulse frequency is too high.  
4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle. |
| Remedy | De-activate the measuring probe evaluation (BI: p2509 = 0 signal).  
Re alarm value = 6:  
Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).  
Re alarm value = 4098:  
Check the Control Unit hardware.  
Re alarm value = 4100:  
Reduce the frequency of the measuring pulses at the measuring probe.  
Re alarm value = 4200:  
Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple. |
Faults and alarms

List of faults and alarms

---

**Reaction upon F:** OFF1
**Acknowl. upon F:** IMMEDIATELY

**A07579 (F)** Encoder 3: Measuring probe evaluation not possible
**Message value:** %1
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** When evaluating the measuring probe, an error occurred.
- Alarm value (r2124, interpret decimal):
  - 6: The input terminal for the measuring probe is not set.
  - 4098: Error when initializing the measuring probe.
  - 4100: The measuring pulse frequency is too high.
  - 4200: The PROFIBUS clock cycle is not a multiple of integer of the position controller clock cycle.

**Remedy:**
- De-activate the measuring probe evaluation (BI: p2509 = 0 signal).
- Re alarm value = 6: Set the input terminal for the measuring probe (p0488, p0489 or p2517, p2518).
- Re alarm value = 4098: Check the Control Unit hardware.
- Re alarm value = 4100: Reduce the frequency of the measuring pulses at the measuring probe.
- Re alarm value = 4200: Set the clock cycle ratio between the PROFIBUS clock cycle and the position controller clock cycle to an integer multiple.

**Reaction upon F:** OFF1
**Acknowl. upon F:** IMMEDIATELY

**A07580 (F, N)** Drive: No Sensor Module with matching component number
**Message value:** Encoder data set: %1
**Drive object:** B_INF, ENC, VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** A Sensor Module with the component number specified in p0141 was not found.
- Alarm value (r2124, interpret decimal):
  - Encoder data set involved (index of p0141).

**Remedy:**
- Correct parameter p0141.

**Reaction upon F:** Infed: OFF1 (NONE, OFF2)
**Vector:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
**Acknowl. upon F:** IMMEDIATELY (POWER ON)

---

**A07581 (F)** Encoder 1: Position actual value preprocessing error
**Message value:** -
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** An error has occurred during the position actual value preprocessing.

**Remedy:**
- Check the encoder for the position actual value preprocessing.

**Reaction upon F:** OFF1 (OFF2, OFF3)
**Acknowl. upon F:** IMMEDIATELY
A07582 (F)  Encoder 2: Position actual value preprocessing error
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07583 (F)  Encoder 3: Position actual value preprocessing error
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the position actual value preprocessing.
Remedy: Check the encoder for the position actual value preprocessing.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

A07584  Encoder 1: Position setting value activated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position actual value is set to the value received via CI: p2515while BI: p2514 = 1 signal. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm automatically disappears with BI: p2514 = 0 signal.

A07585  Encoder 2: Position setting value activated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position actual value is set to the value received via CI: p2515while BI: p2514 = 1 signal. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm automatically disappears with BI: p2514 = 0 signal.

A07586  Encoder 3: Position setting value activated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position actual value is set to the value received via CI: p2515while BI: p2514 = 1 signal. A possible system deviation cannot be corrected.
Remedy: Not necessary.
The alarm automatically disappears with BI: p2514 = 0 signal.
### A07587 Encoder 1: Position actual value preprocessing does not have a valid encoder

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).

**Remedy:** Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection)

### A07588 Encoder 2: Position actual value preprocessing does not have a valid encoder

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).

**Remedy:** Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection)

### A07589 Encoder 3: Position actual value preprocessing does not have a valid encoder

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The following problem has occurred during the position actual value preprocessing.
- an encoder data set has been assigned, however, the encoder data set does not contain any encoder data (p0400 = 0) or invalid data (e.g. p0408 = 0).

**Remedy:** Check the drive data sets, encoder data sets.
See also: p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number), p0189 (Encoder 3 encoder data set number), p0400 (Encoder type selection)

### A07590 Encoder 1: Drive Data Set changeover in operation

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.

**Remedy:** To changeover the drive data set, initially, exit the "operation" mode.

**Reaction upon F:** OFF1 (OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

### A07591 Encoder 2: Drive Data Set changeover in operation

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.

**Remedy:** To changeover the drive data set, initially, exit the "operation" mode.
Faults and alarms

List of faults and alarms

Reaction upon F: OFF1 (OFF2, OFF3)
Acknow. upon F: IMMEDIATELY

A07592 (F) Encoder 3: Drive Data Set changeover in operation
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A Drive Data Set changeover (DDS) with a change of the mechanical relationships and the encoder assignment (p2502) was requested in operation.
Remedy: To changeover the drive data set, initially, exit the "operation" mode.
Reaction upon F: OFF1 (OFF2, OFF3)
Acknow. upon F: IMMEDIATELY

A07593 (F, N) Encoder 1: Value range for position actual value exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded. When the overflow occurs, the "referenced" or "adjustment absolute measuring system" status is reset.
Fault value (r0949, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Remedy: If required, reduce the traversing range or position resolution.
Re alarm value = 3:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).
Reaction upon F: OFF1 (OFF2, OFF3)
Acknow. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknow. upon N: NONE

A07594 (F, N) Encoder 2: Value range for position actual value exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded. When the overflow occurs, the "referenced" or "adjustment absolute measuring system" status is reset.
Fault value (r0949, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.
Remedy: If required, reduce the traversing range or position resolution.
Re alarm value = 3:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).
Reaction upon F: OFF1 (OFF2, OFF3)
Acknow. upon F: IMMEDIATELY
Faults and alarms

List of faults and alarms

A07595 (F, N) Encoder 3: Value range for position actual value exceeded

Message value: %1

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause:
The value range (-2147483648 ... 2147483647) for the position actual value representation was exceeded. When the overflow occurs, the "referenced" or "adjustment absolute measuring system" status is reset. Fault value (r0949, interpret decimal):
1: The position actual value (r2521) has exceeded the value range.
2: The encoder position actual value Gn_XIST2 (r0483) or the absolute value after the load gear (r2723) has exceeded the value range.
3: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range for displaying the position actual value.

Remedy:
If required, reduce the traversing range or position resolution. Re alarm value = 3:
- reduce the length unit (LU) per load revolution for rotary encoders (p2506).
- increase the fine resolution of absolute position actual values (p0419).

Reaction upon F: OFF1 (OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A07596 (F) Encoder 1: Reference function interrupted

Message value: -

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause:
An activated reference function (reference mark search or measuring probe evaluation) was interrupted.
- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was de-activated (BI: p2508 and BI: p2509 = 0 signal).

Remedy:
- check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.

Reaction upon F: OFF1 (OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A07597 (F) Encoder 2: Reference function interrupted

Message value: -

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause:
An activated reference function (reference mark search or measuring probe evaluation) was interrupted.
- an encoder fault has occurred (Gn_ZSW.15 = 1).
- position actual value was set during an activated reference function.
- simultaneously activate reference mark search and measuring probe evaluation (BI: p2508 and BI: p2509 = 1 signal).
- activated reference function (reference mark search or measuring probe evaluation) was de-activated (BI: p2508 and BI: p2509 = 0 signal).

Remedy:
- check the causes and resolve.
- reset the control (BI: p2508 and BI: p2509 = 0 signal) and activate the requested function.
F07599 (A)  Encoder 1: Adjustment not possible
Message value: Drive data set: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.
Remedy: If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.

For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:
1. Motor encoder without position tracking:
   \[ p2906 \times p0433 \times p2505 / (p0432 \times p2504) \]
   \[ p2906 \times p0433 \times p2505 \times p0421 / (p0432 \times p2504) \] for multiturn encoders
2. Motor encoder with position tracking for measuring gear:
   \[ p2906 \times p0412 \times p2505 / p2504 \]
3. Motor encoder with position tracking for load gear:
   \[ p2906 \times p2721 \times p0433 / p0432 \]
4. Motor encoder with position tracking for load and measuring gear:
   \[ p2906 \times p2721 \]
5. Direct encoder without position tracking:
   \[ p2906 \times p0433 / p0432 \]
   \[ p2906 \times p0433 \times p0421 / p0432 \] for multiturn encoders
6. Direct encoder with position tracking for measuring gear:
   \[ p2906 \times p0412 \]

Reaction upon A: NONE
Acknow. upon A: NONE

F07600 (A)  Encoder 2: Adjustment not possible
Message value: Drive data set: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.
Remedy: If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.
For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:

1. Motor encoder without position tracking:
   \[ p_{2506} \times p_{0433} \times p_{2505} / (p_{0432} \times p_{2504}) \]
   \[ p_{2506} \times p_{0433} \times p_{2505} \times p_{0421} / (p_{0432} \times p_{2504}) \] for multiturn encoders

2. Motor encoder with position tracking for measuring gear:
   \[ p_{2506} \times p_{0412} / p_{2504} \]

3. Motor encoder with position tracking for load gear:
   \[ p_{2506} \times p_{2721} \times p_{0433} / p_{0432} \]

4. Motor encoder with position tracking for load and measuring gear:
   \[ p_{2506} \times p_{2721} \]

5. Motor encoder with position tracking:
   \[ p_{2506} \times p_{0412} / p_{0432} \] for multiturn encoders

6. Direct encoder without position tracking:
   \[ p_{2506} \times p_{0433} / p_{0432} \]
   \[ p_{2506} \times p_{0433} \times p_{0421} / p_{0432} \]

7. Direct encoder with position tracking for measuring gear:
   \[ p_{2506} \times p_{0412} \]

Reaction upon A: NONE
Acknowled. upon A: NONE

F07601 (A) Encoder 3: Adjustment not possible

Message value: Drive data set: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY

Cause: The maximum encoder value times the factor to convert the absolute position (r0483 and/or r2723) from increments to length units (LU) has exceeded the value range (-2147483648 ... 2147483647) for displaying the position actual value.

Remedy: If the value for the maximum possible absolute position (LU) is greater than 4294967296, then it is not possible to make an adjustment due to an overflow.

For rotary encoders, the maximum possible absolute position (LU) is calculated as follows:

1. Motor encoder without position tracking:
   \[ p_{2506} \times p_{0433} \times p_{2505} / (p_{0432} \times p_{2504}) \]
   \[ p_{2506} \times p_{0433} \times p_{2505} \times p_{0421} / (p_{0432} \times p_{2504}) \] for multiturn encoders

2. Motor encoder with position tracking for measuring gear:
   \[ p_{2506} \times p_{0412} / p_{2504} \]

3. Motor encoder with position tracking for load gear:
   \[ p_{2506} \times p_{2721} \times p_{0433} / p_{0432} \]

4. Motor encoder with position tracking for load and measuring gear:
   \[ p_{2506} \times p_{2721} \]

5. Motor encoder with position tracking:
   \[ p_{2506} \times p_{0412} / p_{0432} \] for multiturn encoders

6. Direct encoder without position tracking:
   \[ p_{2506} \times p_{0433} / p_{0432} \]
   \[ p_{2506} \times p_{0433} \times p_{0421} / p_{0432} \]

7. Direct encoder with position tracking for measuring gear:
   \[ p_{2506} \times p_{0412} \]

Reaction upon A: NONE
Acknowled. upon A: NONE

F07800 Drive: No power unit present

Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY

Cause: The power unit parameters cannot be read or no parameters are stored in the power unit.
It is possible that the DRIVE-CLiQ cable between the Control Unit and power unit is interrupted or defective.

Note: This fault also occurs if an incorrect topology was selected in the commissioning software and this parameterization is then downloaded to the Control Unit.
See also: r0200 (Power unit code number actual)
Remedy:
- carry out a POWER ON (power off/on) for all components.
- check the DRIVE-CLiQ cable between the Control Unit and power unit.
- Check the power unit and replace if necessary.
- check the Control Unit, and if required replace it.
- after correcting the topology, the parameters must be again downloaded using the commissioning software.

F07801 Drive: Motor overcurrent
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The permissible motor limit current was exceeded.
- effective current limit set too low.
- current controller not correctly set.
- UIf operation: Up ramp was set too short or the load is too high.
- UIf operation: Short-circuit in the motor cable or ground fault.
- UIf operation: Motor current does not match current of power unit.
- Switch to rotating motor without flying restart function (p1200).
Note:
Limit current = 2 x minimum (p0640, 4 x p0305 x p0306) >= 2 x p0305 x p0306
Remedy:
- check the current limits (p0640).
- vector control: Check the current controller (p1715, p1717).
- UIf control: Check the current limiting controller (p1340 ... p1346).
- increase the up ramp (p1120) or reduce the load.
- check the motor and motor cables for short-circuit and ground fault.
- check the motor for the star-delta configuration and rating plate parameterization.
- check the power unit and motor combination.
- Choose "flying restart" function (p1200) if switched to rotating motor.

F07802 Drive: Infeed or power unit not ready
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: After an internal power-on command, the infeed or drive does not signal ready.
- monitoring time is too short.
- DC link voltage is not present.
- associated infeed or drive of the signaling component is defective.
- supply voltage incorrectly set.
Remedy:
- increase the monitoring time (p0857).
- ensure that there is a DC link voltage. Check the DC link busbar. Enable the infeed.
- replace the associated infeed or drive of the signaling component.
- check the line supply voltage setting (p0210).
See also: p0857 (Power unit monitoring time)

A07805 (N) Infeed: Power unit overload I2t
Message value: -
Drive object: B_INF
Reaction: NONE
Acknowledge: NONE
Cause: Alarm threshold for I2t overload (p0294) of the power unit exceeded.
Remedy:
- reduce the continuous load.
- adapt the load duty cycle.
Reaction upon N: NONE
Acknowl. upon N: NONE
A07805 (N)  Drive: Power unit overload I²t
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Alarm threshold for I²t overload (p0294) of the power unit exceeded. The response parameterized in p0290 becomes active. See also: p0290 (Power unit overload response)
Remedy: - reduce the continuous load.
- adapt the load duty cycle.
- check the assignment of the rated currents of the motor and Motor Module.
Reaction upon N: NONE
Acknowl. upon N: NONE

F07807  Drive: Short-circuit/ground fault detected
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: A phase-phase short-circuit or ground fault was detected at the motor-side output terminals of the converter. Fault value (r0949, interpret decimal):
1: Short-circuit, phases U-V
2: Short-circuit, phases U-W
3: Short-circuit, phases V-W
4: Ground fault with overcurrent
1xxxx: Ground fault with current in phase U detected (xxxx = component of the current in phase V in per mille)
2xxxx: Ground fault with current in phase V detected (xxxx = component of the current in phase U in per mille)
Note: Also when interchanging the line and motor cables is identified as a motor-side short circuit. Connecting to a motor that is either not de-energized or partially de-energized is possibly detected as ground fault.
Remedy: - check the motor-side converter connection for a phase-phase short-circuit.
- rule-out interchanged line and motor cables.
- check for a ground fault.
For a ground fault:
- do not enable the pulses when connecting to a rotating motor without the "Flying restart" function activated (p1200).
- increase the de-energization time (p0347).
- If required, deactivate the monitoring (p1901).

F07808 (A)  HF damping module: damping not ready
Message value: New message: %1
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: When switching on or in the switched-on state, the HF damping module does not return a ready signal.
Remedy: - Check the DRIVE-CLiQ wiring to the HF damping module.
- check the 24 V supply voltage.
- if required, replace the HF damping module.
Note: HF Damping Module
Reaction upon A: NONE
Acknowl. upon A: NONE
F07810  Drive: Power unit EEPROM without rated data
Message value:  -
Drive object:  B_INF, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  No rated data are stored in the power unit EEPROM.
See also: p0205 (Power unit application), r0206 (Rated power unit power), r0207 (Rated power unit current), r0208 (Rated power unit line supply voltage), r0209 (Power unit, maximum current)
Remedy:  Replace the power unit or inform Siemens Customer Service.

F07815  Drive: Power unit has been changed
Message value:  Parameter: %1
Drive object:  B_INF
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The code number of the actual power unit does not match the saved number. This only occurs if the comparator in p9906 or p9908 is not at 2 (low) or 3 (minimum). Fault value (r0949, interpret decimal):
Number of the incorrect parameter.
See also: r0200 (Power unit code number actual), p0201 (Power unit code number)
Remedy:  Connect the original power unit and power up the Control Unit again (POWER ON) or set p0201 to r0200 and exit commissioning with p0010 = 0.
For infeeds, the following applies:
Line reactors or line filters must be used that are specified for the new power unit. A line supply and DC link identification routine (p3410 = 5) must then be carried out. It is not possible to change the power unit without re-commissioning the system if the type of infeed (A_Infeed, B_Infeed, S_Infeed), the type of construction/design (booksize, chassis) or the voltage class differ between the old and new power units.
For inverters, the following applies:
If the new power unit is accepted, then if required, the current limit (p0640) can be reduced by a lower maximum current of the power unit (r0209) (torque limits stay the same).
If not only the power unit is changed, but also the motor, then the motor must be re-commissioned (e.g. using p0010 = 1). This is also necessary if motor data is still to be downloaded via DRIVE-CLiQ.
See also: r0200 (Power unit code number actual)

F07815  Drive: Power unit has been changed
Message value:  Parameter: %1
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The code number of the actual power unit does not match the saved number. This only occurs if the comparator in p9906 or p9908 is not at 2 (low) or 3 (minimum). Fault value (r0949, interpret decimal):
Number of the incorrect parameter.
See also: r0200 (Power unit code number actual), p0201 (Power unit code number)
Remedy:  - Connect the original power unit and switch on the Control Unit again (POWER ON).
- Set p0201 to r0200 and exit commissioning with p0010 = 0.
Note:
If the power unit type was changed (see r0203) or the motor replaced, then the motor must be recommissioned (e.g. using p0010 = 1, p3900 = 3, p1900 = 1, 2). This is also necessary if motor data is still to be downloaded via DRIVE-CLiQ.
If the new power unit is accepted, then if required, the current limit p0640 can be reduced by a lower maximum current of the power unit (r0209) (torque limits stay the same).
If the comparison stage in p9906 is set to 2, 3, then commissioning can be exited (p0010 = 0) and the fault acknowledged. This procedure is not recommended for different power unit types.
See also: r0200 (Power unit code number actual)
Faults and alarms

List of faults and alarms

A07820  Drive: Temperature sensor not connected
Message value:  %1
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The temperature sensor for monitoring the motor temperature, specified in p0600, is not available.
Alarm value (r2124, interpret decimal):
1: p0601 = 10 (SME), but in p0600 - not evaluated via encoder is selected.
2: p0600 = 10 (BICO), but the signal source (p0603) is not interconnected.
3: p0601 = 11 (BICO), but in p0600 - not evaluated via BICO interconnection is selected (20 or 21).
4: p0601 = 11 (BICO) and p4610-p4613 > 0, but the associated signal source (p0608, p0609) is not interconnected.
5: Component with sensor evaluation not present or has been removed in the meantime.
6: Evaluation via Motor Module not possible (r0192.21).
Remedy:  Re alarm value = 1:
- In p0600 set an encoder with temperature sensor.
Re alarm value = 2:
- interconnect p0603 with the temperature signal.
Re alarm value = 3, 4:
- set the available temperature sensor (p0600, p0601).
- set p4610 ... p4613 = 0 (no sensor), or interconnect p0608 or p0609 with an external temperature signal.
Re alarm value = 5:
- connect the component with the temperature sensor. Check the DRIVE-CLiQ connection.
Re alarm value = 6:
- update the Motor Module firmware. Connect temperature sensor via encoder.
See also: p0600 (Motor temperature sensor for monitoring), p0601

A07825 (N)  Drive: Simulation mode activated
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The simulation mode is activated.
The drive can only be powered up if the DC link voltage is less than 40 V.
Remedy:  Not necessary.
The alarm automatically disappears if simulation mode is de-activated with p1272 = 0.
Reaction upon N:  NONE
Acknowl. upon N:  NONE

F07826  Drive: DC link voltage for simulation operation too high
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY
Cause:  The simulation mode is activated and the DC link voltage is greater than the permissible value of 40 V.
Remedy:  - switch out (disable) simulation mode (p1272 = 0) and acknowledge the fault.
- reduce the input voltage in order to reach a DC link voltage below 40 V.

F07840  Drive: Infeed operation missing
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF2 (NONE)
Acknowledge:  IMMEDIATELY
Cause:  The signal "infeed operation" is not present although the enable signals for the drive have been present for longer
than the parameterized monitoring time (p0857).
- infeed not operational.
- interconnection of the binector input for the ready signal is either incorrect or missing (p0864).
- infeed is presently carrying out a line supply identification routine.
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Remedy: 
- bring the infeed into an operational state.
- check the interconnection of the binector input for the signal "infeed operation" (p0864).
- increase the monitoring time (p0857).
- wait until the infeed has completed the line supply identification routine.

See also: p0857 (Power unit monitoring time), p0864 (Infeed operation)

F07841 (A) Drive: Infeed operation withdrawn

Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY

Cause: The signal "infeed operation" was withdrawn in operation.
- interconnection of the binector input for the signal "infeed operation" is either incorrect or missing (p0864).
- the enable signals of the infeed were disabled.
- due to a fault, the infeed withdraws the signal "infeed operation".

Remedy: 
- check the interconnection of the binector input for the "infeed operation" signal (p0864).
- check the enable signals of the infeed and if required, enable.
- remove and acknowledge an infeed fault.

Note:
If this drive is intended to back up the DC link regeneratively, then the fault response must be parameterized for NONE, OFF1 or OFF3, so that the drive can continue to operate even after the infeed fails.

A07850 (F) External alarm 1

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: The BICO signal for "external alarm 1" was triggered.
The condition for this external alarm is fulfilled.
See also: p2112 (External alarm 1)

Remedy: Eliminate the causes of this alarm.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY (POWER ON)

A07851 (F) External alarm 2

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: The BICO signal for "external alarm 2" was triggered.
The condition for this external alarm is fulfilled.
See also: p2116 (External alarm 2)

Remedy: Eliminate the causes of this alarm.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY (POWER ON)
### A07852 (F)  External alarm 3

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The BICO signal for "external alarm 3" was triggered.  
The condition for this external alarm is fulfilled.  
See also: p2117 (External alarm 3)  
**Remedy:** Eliminate the causes of this alarm.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)

### F07860 (A)  External fault 1

**Message value:** -  
**Drive object:** All objects  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The BICO signal "external fault 1" was triggered.  
See also: p2106 (External fault 1)  
**Remedy:** Eliminate the causes of this fault.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F07861 (A)  External fault 2

**Message value:** -  
**Drive object:** All objects  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The BICO signal "external fault 2" was triggered.  
See also: p2107 (External fault 2)  
**Remedy:** Eliminate the causes of this fault.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F07862 (A)  External fault 3

**Message value:** -  
**Drive object:** All objects  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** The BICO signal "external fault 3" was triggered.  
See also: p2108, p3111, p3112  
**Remedy:** Eliminate the causes of this fault.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE
F07890 Internal voltage protection / internal armature short-circuit with STO active
Message value: -
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The internal armature short-circuit (p1231 = 4) is not possible as Safe Torque Off (STO) is enabled. The pulses cannot be enabled.
Remedy: Switch out the internal armature short-circuit (p1231=0) or de-activate Safe Torque Off (p9501 = 0).
Note: STO: Safe Torque Off / SH: Safe standstill

A07899 (N) Drive: Stall monitoring not possible
Message value: Parameter: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Stall monitoring is not possible, because a change was made into the open-loop speed controlled mode before the wait time p2177 had expired. This situation can only occur, if the following conditions apply:
p1300 = 20
p2177 > p1758
p1750.2 = 0
p1750.8 = 0
Remedy:
- Deactivate the changeover into open-loop speed controlled operation when operating at the torque limit (p1750.6 = 0).
Condition:
No slow reversing through the open-loop speed controlled operating range p1755 within the time p1758 when operating at the torque limit.
- shorten the stall detection wait time (p2177 < p1758).
- Activate closed-loop controlled operation from standstill and higher (p1750.2 = 1).
Condition:
There is no active load, for example, a hoisting gear
- Use an operating mode with encoder (p1300 = 21).

F07900 (N, A) Drive: Motor blocked
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: Motor has been operating at the torque limit longer than the time specified in p2177 and below the speed threshold in p2175. This signal can also be initiated if the speed actual value is oscillating and the speed controller output repeatedly goes to its limit. If the simulation mode is enabled (p1272 = 1) and the closed-loop control with speed encoder activated (p1300 = 21), then the inhibit signal is generated if the encoder signal is not received from a motor that is driven with the torque setpoint of the closed-loop control.
See also: p2175 (Motor blocked speed threshold), p2177 (Motor blocked delay time)
Remedy:
- check that the motor can freely move.
- check the torque limit: For a positive direction of rotation r1538, for a negative direction of rotation r1539.
- check the parameter, message "Motor blocked" and if required, correct (p2175, p2177).
- check the inversion of the actual value (p0410).
- check the motor encoder connection.
- check the encoder pulse number (p0408).
- for SERVO with encoderless operation and motors with low power ratings (< 300 W), increase the pulse frequency (p1800).
- after de-selecting the "Basic positioner" (EPOS) function mode, check the motoring (p1528) and regenerative (p1529) torque limit and modify again.
- in the simulation mode and operation with speed encoder, the power unit to which the motor is connected must be powered up and must be supplied with the torque setpoint of the simulated closed-loop control. Otherwise, change over to encoderless control (see p1300).

**F07901**  
**Drive: Motor overspeed**

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (IASC/DCBRAKE)  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
The maximum permissible speed was either positively or negatively exceeded.  
The maximum permissible positive speed is formed as follows: Minimum (p1082, CI: p1085) + p2162  
The maximum permissible negative speed is formed as follows: Maximum (p1082, CI: 1088) - p2162  
**Remedy:**  
The following applies for a positive direction of rotation:  
- check r1084 and if required, correct p1082, CI:p1085 and p2162.  
The following applies for a negative direction of rotation:  
- check r1087 and if required, correct p1082, CI:p1088 and p2162.  
Activate pre-control of the speed limiting controller (p1401.7 = 1).  
Increase the hysteresis for the overspeed signal p2162. This upper limit is dependent upon the maximum motor speed p0322 and the maximum speed p1082 of the setpoint channel.

**F07902 (N, A)**  
**Drive: Motor stalled**

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
The system has identified that the motor has stalled for a time longer than is set in p2178.  
Fault value (r0949, interpret decimal):  
1: Stall detection using r1408.11 (p1744 or p0492).  
2: Stall detection using r1408.12 (p1745).  
3: Stall detection using r0056.11 (only for separately excited synchronous motors).  
See also: p1744 (Motor model speed threshold stall detection), p2178 (Motor stalled delay time)  
**Remedy:**  
It should always be carefully ensured that the motor data identification (p1910) as well as the rotating measurement (p1960) were carried out (also refer to r3925). For synchronous motors with encoder, the encoder must have been adjusted (p1990).  
For closed-loop speed and torque control with speed encoder, the following applies:  
- check the speed signal (interrupted cable, polarity, pulse number, broken encoder shaft).  
- check the speed encoder, if another speed encoder was selected using the data set changeover. This must be connected to the same motor that is controlled for the data set changeover.  
If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased. For resolvers with a high signal ripple, for example p0492 should be increased and the speed signal smoothed (p1441, p1442).

For closed-loop speed and torque control without speed encoder, the following applies:  
- Check whether the drive stalls solely due to the load in controlled mode (r1750.0) or when the speed setpoint is still zero. If so, increase the current setpoint via p1610 or set p1750.2 = 1 (sensorless vector control to standstill for passive loads).  
- If the motor excitation time (p0346) was significantly reduced and the drive stalls when it is switched on and run immediately, p0346 should be increased again or quick magnetizing selected (p1401).  
- check the current limits (p0640, r0067, r0289). If the current limits are too low, then the drive cannot be magnetized.  
- check the current controller (p1715, p1717) and the speed adaptation controller (p1764, p1767). If the dynamic response was significantly reduced, then this should be increased again.

- If there is no fault, then the fault tolerance (p1745) or the delay time (p2178) can be increased.
The following generally apply for closed-loop and torque control:
- Check whether the motor cables are disconnected.
- If the fault occurs with fault value 2 when the motor accelerates very quickly to the field weakening range, the deviation between the flux setpoint and flux actual value can be reduced and, in turn, the message prevented, by reducing p1596.

For separately-excited synchronous motors (closed-loop control with speed encoder), the following applies:
- check the speed signal (interrupted cable, polarity, pulse number).
- ensure the correct motor parameterization (rating plate and equivalent circuit diagram parameters).
- check the excitation equipment and the interface to the closed-loop control.
- encoder the highest possible dynamic response of the closed-loop excitation current control.
- check the speed control for any tendency to oscillate and if resonance effects occur, use a bandstop filter.
- do not exceed the maximum speed (p2162).

If there is no fault, then the delay time can be increased (p2178).

A07903 Drive: Motor speed deviation
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The absolute value of the speed difference from the two setpoints (p2151, p2154) and the speed actual value (r2169) exceeds the tolerance threshold (p2163) longer than tolerated (p2164, p2166).
Possible causes could be:
- the load torque is greater than the torque setpoint.
- when accelerating, the torque/current/power limit is reached. If the limits are not sufficient, then it is possible that the drive has been dimensioned too small.
- for closed-loop torque control, the speed setpoint does not track the speed actual value.
- for active Vdc controller.

Remedy:
- increase p2163 and/or p2166.
- increase the torque/current/power limits.
- for closed-loop torque control: The speed setpoint should track the speed actual value.
- de-activate alarm with p2149.0 = 0.

A07904 (N) External armature short-circuit: Contactor feedback signal "Closed" missing
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When closing, the contactor feedback signal (p1235) did not issue the signal "Closed" (r1239.1 = 1) within the monitoring time (p1236).

Remedy:
- check that the contactor feedback signal is correctly connected (p1235).
- check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- increase the monitoring time (p1236).
- if required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).
F07905 (N, A)  
External armature short-circuit: Contactor feedback signal "Open" missing

Message value:  
-  

Drive object:  
B_INF, VECTOR_G

Reaction:  
OFF2 (NONE)

Acknowledge:  
IMMEDIATELY

Cause:  
When opening, the contactor feedback signal (p1235) did not issue the signal "Open" (r1239.1 = 0) within the monitoring time (p1236).

Remedy:  
- check that the contactor feedback signal is correctly connected (p1235).
- check the logic of the contactor feedback signal (r1239.1 = 1: "Closed", r1239.1 = 0: "Open").
- increase the monitoring time (p1236).
- if required, set the external armature short-circuit without contactor feedback signal (p1231 = 2).

Reaction upon N:  
NONE

Acknowl. upon N:  
NONE

Reaction upon A:  
NONE

Acknowl. upon A:  
NONE

F07906  
Armature short-circuit / internal voltage protection: Parameterization error

Message value:  
Fault cause: %1, motor data set: %2

Drive object:  
VECTOR_G

Reaction:  
OFF2

Acknowledge:  
IMMEDIATELY

Cause:  
The armature short-circuit is incorrectly parameterized.

 Fault value (r0949, interpret decimal):
zzzzyyxx: zzzz = fault cause, xx = motor data set
zzzz = 0001 hex = 1 dec:
A permanent-magnet synchronous motor has not been selected.
zzzz = 0002 hex = 2 dec:
No induction motor selected.
zzzz = 0065 hex = 101 dec:
External armature short-circuit: Output (r1239.0) not wired.
zzzz = 0066 hex = 102 dec:
External armature short-circuit with contactor feedback signal: No feedback signal connected (Bl:p1235).
zzzz = 0067 hex = 103 dec:
External armature short-circuit without contactor feedback signal: Wait time when opening (p1237) is 0.
zzzz = 00C9 hex = 201 dec:
Internal voltage protection: The maximum output current of the Motor Module (r0209) is less than 1.8 x motor short-circuit current (r0331).
zzzz = 00CA hex = 202 dec:
Internal voltage protection: A Motor Module in booksize or chassis format is not being used.
zzzz = 00CB hex = 203 dec:
Internal voltage protection: The motor short-circuit current (p0320) is greater than the maximum motor current (p0323).
zzzz = 00CC hex = 204 dec:
Internal voltage protection: The activation (p1231 = 4) is not given for all motor data sets with synchronous motors (p0300 = 2xx, 4xx).

Remedy:  
For fault value = 1:
- an armature short-circuit / voltage protection is only permissible for permanent-magnetic synchronous motors. The highest position of the motor type in p0300 must either be 2 or 4. 
For fault value = 101:
- the contactor for the external armature short-circuit configuration should be controlled using output signal r1239.0. 
The signal can, e.g. be connected to an output terminal via binector input p0738. Before this fault can be acknowledged, p1231 must be set again. 
For fault value = 102:
- if the external armature short-circuit with contactor feedback signal (p1231 = 1) is selected, this feedback signal must be connected to an input terminal (e.g. r722.x) and then connected to Bl: p1235. 
- alternatively, the external armature short-circuit without contactor feedback signal (p1231 = 2) can be selected. 
For fault value = 103:
- if the external armature short-circuit without contactor feedback signal (p1231 = 2) is selected, then a delay time must be parameterized in p1237. This time must always be greater than the actual contactor opening time, as otherwise the Motor Module would be short-circuited!
For fault value = 201:
- a Motor Module with a higher maximum current or a motor with a lower short-circuit current must be used. The maximum Motor Module current must be higher than 1.8 x short-circuit current of the motor.

For fault value = 202:
- for internal voltage protection, use a Motor Module in booksize or chassis format.

For fault value = 203:
- for internal voltage protection, only use short-circuit proof motors.

For fault value = 204:
- The internal voltage protection must either be activated for all motor data sets with synchronous motors (p0300 = 2xx, 4xx) (p1231 = 3) or it must be de-activated for all motor data sets (p1231 not equal to 3). This therefore ensures that the protection cannot be accidentally withdrawn as a result of a data set changeover. The fault can only be acknowledged if this condition is fulfilled.

**F07907 Internal armature short-circuit: Motor terminals are not at zero potential after pulse suppression**

**Message value:**
- 1

**Drive object:**
VECTOR_G

**Reaction:**
NONE

**Acknowledge:**
IMMEDIATELY

**Cause:**
The function "Internal voltage protection" (p1231 = 3) was activated.
The following must be observed:
- when the internal voltage protection is active, after pulse suppression, all of the motor terminals are at half of the DC link voltage (without an internal voltage protection, the motor terminals are at zero potential)! It is only permissible to use motors that are short-circuit proof (p0320 < p0323).
- the Motor Module must be able to continually conduct 180% short-circuit current (r0331) of the motor (r0289).
- the internal voltage protection cannot be interrupted due to a fault response. If an overcurrent condition occurs during the active, internal voltage protection, then this can destroy the Motor Module and/or the motor.
- if the Motor Module does not support the autonomous, internal voltage protection (r0192.10 = 0), in order to ensure safe, reliable functioning when the line supply fails, an external 24 V power supply (UPS) must be used for the components.
- if the Motor Module does support the autonomous, internal voltage protection (r0192.10 = 1), in order to ensure safe, reliable functioning when the line supply fails, the 24 V power supply for the components must be provided through a Control Supply Module.
- if the internal voltage protection is active, it is not permissible that the motor is driven by the load for a longer period of time (e.g. as a result of loads that move the motor or another coupled motor).

**Remedy:**
Not necessary.
This a note for the user.

**A07908 Internal armature short-circuit active**

**Message value:**
- 1

**Drive object:**
VECTOR_G

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
The Motor Module signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal armature short-circuit is selected (p1231 = 4);

**Remedy:**
For synchronous motors, the armature short-circuit braking is activated with binector input p1230 = 1 signal.
See also: p1230 (Armature short-circuit / DC braking activation), p1231 (Armature short-circuit / DC braking configuration)

**F07909 Internal voltage protection: De-activation only effective after POWER ON**

**Message value:**
- 1

**Drive object:**
VECTOR_G

**Reaction:**
NONE

**Acknowledge:**
POWER ON

**Cause:**
The de-activation of the internal voltage protection (p1231 not equal to 3) only becomes effective after POWER ON. The status signal r1239.6 = 1 indicates that the internal voltage protection is ready.

**Remedy:**
Not necessary.
This a note for the user.
### A07910 (N) Drive: Motor overtemperature

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
- KTY or no sensor:  
  The measured motor temperature or temperature of motor temperature model 2 has exceeded the alarm threshold (p0604, p0616). The response parameterized in p0610 becomes active.  
- PTC or bimetallic NC contact:  
  The response threshold of 1650 Ohm was exceeded or the NC contact opened.  
- Alarm value (r2124, interpret decimal):  
  - SME not selected in p0601:  
    11: No output current reduction.  
    12: Output current reduction active.  
  - SME or TM120 selected in p0601 (p0601 = 10, 11):  
    this is the number of the temperature channel leading to the message.  
  See also: p0604 (Mot_temp_mod 1/KTY alarm threshold), p0610 (Motor overtemperature response)  
**Remedy:**  
- check the motor load.  
- check the motor ambient temperature and cooling.  
- check PTC or bimetallic NC contact.  
  See also: p0612 (Mot_temp_mod activation), p0625 (Motor ambient temperature), p0626 (Motor overtemperature, stator core), p0627 (Motor overtemperature, stator winding), p0628 (Motor overtemperature rotor winding)  

**Reaction upon N:** NONE  
**Acknowledge upon N:** NONE

### F07913 Excitation current outside the tolerance range

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
The difference between the excitation current actual value and setpoint has exceeded the tolerance:  
\[ \text{abs}(r1641 - r1626) > p3201 + p3202 \]  
The cause of this fault is again reset for \( \text{abs}(r1641 - r1626) < p3201 \).  
**Remedy:**  
- check the parameterization (p1640, p3201, p3202).  
- check the interfaces to the excitation equipment (r1626, p1640).  
- check the excitation equipment.  

### F07914 Flux out of tolerance

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
The difference between the flux actual value and setpoint has exceeded the tolerance:  
\[ \text{abs}(r0084 - r1598) > p3204 + p3205 \]  
The cause of this fault is again reset for \( \text{abs}(r0084 - r1598) < p3204 \).  
The fault is only issued after the delay time in p3206 has expired.  
**Remedy:**  
- check the parameterization (p3204, p3205).  
- check the interfaces to the excitation equipment (r1626, p1640).  
- check the excitation equipment.  
- check the flux control (p1590, p1592, p1597).  
- check the control for oscillation and take the appropriate counter measures (e.g. optimize the speed control loop, parameterize a bandstop filter).
### A07918 (N) Three-phase setpoint generator operation selected/active

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Only for separately excited synchronous motors (p0300 = 5):  
The actual open-loop/closed-loop control mode is I/f control (open-loop) with a fixed current (p1300 = 18).  
The speed is entered via the setpoint channel and the current setpoint is given by the minimum current (p1620).  
It must be ensured that in this mode, the control dynamic performance is very limited. This is the reason that longer ramp-up times should be set for the setpoint speed than for normal operation.  
See also: p1620 (Stator current, minimum)  
**Remedy:** Select another open-loop/closed-loop control mode  
See also: p1300 (Open-loop/closed-loop control operating mode)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A07920 Drive: Torque/speed too low

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The torque deviates from the torque/speed envelope characteristic (too low).  
See also: p2181 (Load monitoring response)  
**Remedy:** - check the connection between the motor and load.  
- adapt the parameterization corresponding to the load.

### A07921 Drive: Torque/speed too high

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The torque deviates from the torque/speed envelope characteristic (too high).  
**Remedy:** - check the connection between the motor and load.  
- adapt the parameterization corresponding to the load.

### A07922 Drive: Torque/speed out of tolerance

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The torque deviates from the torque/speed envelope characteristic.  
**Remedy:** - check the connection between the motor and load.  
- adapt the parameterization corresponding to the load.

### F07923 Drive: Torque/speed too low

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (NONE, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The torque deviates from the torque/speed envelope characteristic (too low).  
**Remedy:** - check the connection between the motor and load.  
- adapt the parameterization corresponding to the load.
### List of faults and alarms

#### F07924 Drive: Torque/speed too high
- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** OFF1 (NONE, OFF2, OFF3)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The torque deviates from the torque/speed envelope characteristic (too high).
- **Remedy:**
  - check the connection between the motor and load.
  - adapt the parameterization corresponding to the load.

#### F07925 Drive: Torque/speed out of tolerance
- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** OFF1 (NONE, OFF2, OFF3)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The torque deviates from the torque/speed envelope characteristic.
- **Remedy:**
  - check the connection between the motor and load.
  - adapt the parameterization corresponding to the load.

#### A07927 DC braking active
- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The motor is braked with DC current. DC braking is active.
  1) A message with response DCBRK is active. The motor is braked with the braking current set in p1232 for the duration set in p1233. If the standstill threshold p1226 is undershot, then braking is prematurely canceled.
  2) DC braking has been activated at binector input p1230 with the DC braking set (p1230 = 4). Braking current p1232 is injected until this binector input becomes inactive.
- **Remedy:** Not necessary. The alarm automatically disappears once DC braking has been executed.

#### F07928 Internal voltage protection initiated
- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** The Motor Module signals that the motor is short-circuited through the power semiconductors (r1239.5 = 1). The pulses cannot be enabled. The internal voltage protection is selected (p1231 = 3).
- **Remedy:** If the Motor Module supports the autonomous internal voltage protection (r0192.10 = 1), then the Motor Module automatically decides - using the DC link voltage - as to whether the armature short-circuit should be activated. The armature short-circuit is activated and response OFF2 is initiated if the DC link voltage exceeds 800 V. If the DC link voltage falls below 450 V, then the armature short-circuit is withdrawn. If the motor is still in a critical speed range, the armature short-circuit is re-activated once the DC link voltage exceeds the threshold of 800 V. If the autonomous (independent) internal voltage protection is active (r1239.5 = 1) and the line supply returns (450 V < DC link voltage < 800 V), the armature short-circuit is withdrawn after 3 minutes.

#### F07930 Drive: Brake control error
- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** OFF1 (NONE, OFF2, OFF3)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The Control Unit has detected a brake control error.
Fault value (r0949, interpret decimal):
- 10, 11: Fault in "open holding brake" operation.
  - No brake connected or wire breakage (check whether brake releases for p1278 = 1).
  - Ground fault in brake cable.
- 20: Fault in "brake open" state.
  - Short-circuit in brake winding.
- 30, 31: Fault in "close holding brake" operation.
  - No brake connected or wire breakage (check whether brake releases for p1278 = 1).
  - Short-circuit in brake winding.
- 40: Fault in "brake closed" state.
- 50: Fault in the brake control circuit of the Control Unit or communication fault between Control Unit and Motor Module (brake control diagnostics).
- 80: When using the Safe Brake Adaptor (SBA), a fault has occurred in the brake control of the Control Unit.
- 90: Brake released for service purposes (X4).

Note:
The following causes may apply to fault values:
- motor cable is not shielded correctly.
- defect in control circuit of the Motor Module.
See also: p1278 (Brake control, diagnostics evaluation)

Remedy:
- check the motor holding brake connection.
- for a parallel connection, check the setting of the power unit data set to control the holding brake (p7015).
- check the function of the motor holding brake.
- check whether there is a DRIVE-CLIQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- replace the Motor Module involved.
Operation with Safe Brake Module:
- check the Safe Brake Modules connection.
- replace the Safe Brake Module.
Operation with Safe Brake Module (SBA):
- check the SBA connection and if required, replace the SBA.
See also: p1215 (Motor holding brake configuration), p1278 (Brake control, diagnostics evaluation)

A07931 (F, N) Brake does not open

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: This alarm is output for r1229.4 = 1.
See also: p1216 (Motor holding brake, opening time), r1229 (Motor holding brake status word)
Remedy:
- check the functionality of the motor holding brake.
- check the feedback signal (p1223).

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A07932 Brake does not close

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: This alarm is output for r1229.5 = 1.
For r1229.5 = 1, OFF1/OFF3 are suppressed to prevent the drive accelerating by a load that drives the motor - whereby OFF2 remains effective.
See also: p1217 (Motor holding brake closing time), r1229 (Motor holding brake status word)
Remedy:
- check the functionality of the motor holding brake.
- check the feedback signal (p1222).
F07934 (N) Drive: S120 Combi motor holding brake configuration

Message value: %1
Drive object: VECTOR_G
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A connected motor holding brake has been detected with an S120 Combi. However, this brake has not been assigned to just one Combi feed drive and, therefore, brake control is not configured (correctly). It is also not permitted to assign the brake to the spindle.
Fault value (r0949, interpret decimal):
0: No motor holding brake is assigned (p1215 = 0 or 3 on all S120 Combi feed drives).
1: More than one motor holding brake has been assigned (p1215 = 1 or 2 on more than one S120 Combi feed drive) - or there is more than one DRIVE-CLiQ motor with motor holding brake.
2: Brake was accidentally assigned to the spindle (p1215 = 1); this is not permitted.
3: An attempt was made to enable the function "Safe brake control" (SBC, p9602 = p9802 = 1) for the spindle. This is not permitted.
Remedy: Check whether the motor holding brake has been assigned to one S120 Combi feed drive exclusively (p1215 = 1 or 2) and not the spindle.
The fault will only be withdrawn once the motor holding brake has been assigned to just one of the S120 Combi feed drives and not the spindle (p1215 = 1 or 2 for this one drive). From this point, the motor holding brake will be controlled by this drive.
See also: p1215 (Motor holding brake configuration)

F07935 (N) Drive: Incorrect motor holding brake configuration

Message value: %1
Drive object: VECTOR_G
Reaction: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An incorrect motor holding brake configuration was detected.
Fault value (r0949, interpret decimal):
0: A motor holding brake was detected where the brake control has not been configured (p1215 = 0).
The brake control configuration was set to "motor holding brake the same as sequence control" (p1215 = 1) (only when commissioning for the first time).
For a chassis unit with Safe Brake Adapter (SBA), the interconnection p9621 = r9872.3 was established (only when commissioning for the first time).
For a parallel connection, the power unit was set in p7015, to which the motor holding brake is connected (only when commissioning for the first time).
1: A motor holding brake was detected where the brake control has not been configured (p1215 = 0).
The brake control configuration was left at "No motor holding brake available" (p1215 = 0).
11: The identification had detected more than one motor holding brake for a parallel connection.
12: For the parallel connection, in p0121 there is no valid component number for the power unit data set that is set in p7015.
13: With the "Safe brake control" (SBC) function activated, an attempt was made to change the value in p7015.
14: For a parallel connection, the power units set in p7015 cannot be addressed.
Remedy: For fault value = 0:
- No remedy required.
For fault value = 1:
- If required change the motor holding brake configuration (p1215 = 1, 2).
- If this fault value unexpectedly occurs, then the motor connections should be checked in order to rule out that they have been interchanged.
For fault value = 11:
For a parallel connection, only connect one motor holding brake.
For fault value = 12:
Check the setting of the power unit data set for a parallel connection (p7015).
For fault value = 13:
Before changing p7015, deactivate the "Safe brake control" function (SBC) (p9602).
For fault value = 14:
Check whether the power unit supports the brake control for a parallel connection (r9771.14).
Check whether there is a DRIVE-CLIQ communication error between the Control Unit and the power unit involved
and, if required, carry out a diagnostics routine for the faults identified.
See also: p1215 (Motor holding brake configuration)

Reaction upon N: NONE
Acknowl. upon N: NONE

F07937 (N)  Drive: Speed deviation between motor model and external speed
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The absolute value of the speed difference from the two actual values (r2169, r1443) exceeds the tolerance threshold (p3236) for longer than permitted (p3238).
Possible causes:
- the interconnection or scaling of the external encoder signal is incorrect (p1440, p2000).
- speed encoder for external encoder signal faulty.
- encoder signal's polarity or gain incorrect.
- smoothing time constant for model speed for monitoring too high (p2157).
- smoothing time constant or threshold values for monitoring too low (p3236, p3238).
See also: p2149 (Monitoring configuration)
Remedy:
- check that the external speed matches the motor speed (p1440, r1443).
- check the polarity of the external speed (r1443).
- check the interconnection of the connector input and the scaling of the signal (p1440, p2000).
Reaction upon N: NONE
Acknowl. upon N: NONE

F07940  Sync-line-drive: Synchronizing error
Message value: -
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: After synchronization has been completed, the phase difference (r3808) is greater than the threshold value, phase synchronism (p3813).
OFF1 or OFF3 response, while the closed-loop phase control is active (r3819.6 = 1) or synchronism reached (r3819.2 = 1).
Enable signal withdrawn (p3802 = 0), while the closed-loop phase control was active (r3819.6 = 1).
Remedy:
If required increase the threshold value phase synchronism (p3813) for synchronizing the line supply to the drive.
Before OFF1 or OFF3, complete synchronizing (r03819 = 0).
Before withdrawing the enable signal (p3802 = 0), reach synchronism (r3819.2 = 1).
See also: p3813 (Sync-line-drive phase synchronism threshold value)

A07941  Sync-line-drive: Target frequency not permissible
Message value: Parameter: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The target frequency is outside the permissible value range.
Alarm value (r2124, interpret decimal):
1084: Target frequency greater than the positive speed limit, f_sync > f_max (r1084).
1087: Target frequency less than the negative speed limit, f_sync < f_min (r1087).
Remedy:
Fulfill the conditions for the target frequency for line-drive synchronization.
See also: r1084 (Speed limit positive effective), r1087 (Speed limit negative effective)
### A07942  Sync-line-drive: Setpoint frequency is completely different than the target frequency

- **Message value:** 
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** There is a considerable difference between the setpoint frequency and the target frequency \((f_{\text{set}} \neq f_{\text{target}})\). The deviation that can be tolerated is set in p3806.
- **Remedy:** The alarm automatically disappears after the difference that can be tolerated between the setpoint and target frequencies \((p3806)\) is reached.
  
  See also: p3806 (Sync-line-drive frequency difference threshold value)

### A07943  Sync-line-drive: Synchronization not permitted

- **Message value:** Parameter: %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** Synchronization is not permitted.
  
  - Alarm value \((r2124,\) interpret decimal):
    - 1300: The control mode \((p1300)\) has not been set to encoderless closed-loop speed control or U/f characteristic.
    - 1910: Motor data identification activated.
    - 1960: Speed controller optimization activated.
    - 1990: Encoder adjustment activated.
    - 3801: Voltage Sensing Module (VSM) not found.
    - 3845: Friction characteristic record activated.
- **Remedy:** Fulfill the conditions for the line-drive synchronization.
  
  - Re alarm value = 1300:
    - Set the control mode \((p1300)\) to encoderless closed-loop speed control \((p1300 = 20)\) or U/f characteristic \((p1300 = 0 \ldots 19)\).
    - Re alarm value = 1910:
      - Exit the motor data identification routine \((p1910)\).
    - Re alarm value = 1960:
      - Exit the speed controller optimization routine \((p1960)\).
    - Re alarm value = 1990:
      - Exit the encoder adjustment \((p1990)\).
    - Connect the Voltage Sensing Module (VSM), assign it to the synchronizing drive \((\text{see p9910, p0151})\) and enter the drive object number of the synchronizing drive in \(p3801\). When connecting the VSM to a neighboring drive object, ensure that the same current controller clock cycle \(p0115[0]\) exists as the one in the synchronizing drive.
    - Re alarm value = 3845:
      - Exit the friction characteristic record \((p3845)\).

### F07950 (A)  Drive: Incorrect motor parameter

- **Message value:** Parameter: %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - The motor parameters were incorrectly entered while commissioning \((\text{e.g. } p0300 = 0, \text{ no motor})\)
  - The braking resistor \((p6811)\) has still not been parameterized - commissioning cannot be completed.
- **Fault value \((r0949,\) interpret decimal):
  - The following motor parameters can be incorrect for fault value 307:
    - \(p0304, p0305, p0307, p0308, p0309\)
  - See also: \(p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323\)
- **Remedy:**
  - Compare the motor data with the rating plate data and if required, correct.
  - See also: \(p0300, p0301, p0304, p0305, p0307, p0310, p0311, p0314, p0316, p0320, p0322, p0323\)
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE
**F07955**  
**Drive: Motor has been changed**

Message value: Parameter: %1  
Drive object: VECTOR_G  
Reaction: NONE  
Acknowledge: IMMEDIATELY  

**Cause:**  
The code number of the actual motor with DRIVE-CLiQ does not match the saved number.  
Fault value (r0949, interpret decimal):  
Number of the incorrect parameter.  
See also: p0301 (Motor code number selection), r0302 (Motor code number of motor with DRIVE-CLiQ)

**Remedy:**  
Connect the original motor, power up the Control Unit again (POWER ON) and exit quick commissioning with p0010 = 0.  
Or set p0300 = 10000 (load the parameters from the motor with DRIVE-CLiQ) and re-commission.  
Quick commissioning (p0010 = 1) is automatically exited with p3900 > 0.  
If quick commissioning was exited with p0010 = 0, then an automatic controller calculation (p0340 = 1) is not carried out.

**F07956 (A)**  
**Drive: Motor code does not match the list (catalog) motor**

Message value: %1  
Drive object: VECTOR_G  
Reaction: NONE  
Acknowledge: IMMEDIATELY  

**Cause:**  
The motor code of the connected motor with DRIVE-CLiQ does not match the possible list motor types (see selection in p0300).  
The connected motor with DRIVE-CLiQ might not be supported by this firmware version.  
Fault value (r0949, interpret decimal):  
Motor code of the connected motor with DRIVE-CLiQ.  
Note:  
The first three digits of the motor code generally correspond to the list motor type.

**Remedy:**  
Use a motor with DRIVE-CLiQ and the matching motor code.

**A07960**  
**Drive: Incorrect friction characteristic**

Message value: Parameter: %1  
Drive object: VECTOR_G  
Reaction: NONE  
Acknowledge: NONE  

**Cause:**  
The friction characteristic is incorrect.  
Alarm value (r2124, interpret decimal):  
1538:  
The friction torque is greater than the maximum from the upper effective torque limit (p1538) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.  
1539:  
The friction torque is less than the minimum from the lower effective torque limit (p1539) and zero. This is the reason that the output of the friction characteristic (r3841) is limited to this value.  
3820 ... 3829:  
Incorrect parameter number. The speeds entered in the parameters for the friction characteristic do not correspond to the following condition:  
0.0 < p3820 < p3821 < ... < p3829 <= p0322 or p0322 = 0  
Therefore the output of the friction characteristic (r3841) is set to zero.  
3830 ... 3839:  
Incorrect parameter number. The torques entered in the parameters for the friction characteristic do not correspond to the following condition:  
0 <= p3830, p3831 ... p3839 <= p0333  
Therefore the output of the friction characteristic (r3841) is set to zero.  
See also: r3840 (Friction characteristic, status word)

**Remedy:**  
Fulfill the conditions for the friction characteristic.  
Re alarm value = 1538:  
Check the upper effective torque limit (e.g. in the field weakening range).
Faults and alarms

List of faults and alarms

Re alarm value = 1539:
Check the lower effective torque limit (e.g. in the field weakening range).
Re alarm value = 3820 ... 3839:
Fulfill the conditions to set the parameters of the friction characteristic.
If the motor data (e.g. the maximum speed p0322) are changed during commissioning (p0010 = 1, 3), then the technological limits and threshold values, dependent on this, must be re-calculated by selecting p0340= 5).

A07961
Drive: Friction characteristic record activated
Message value: 
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The automatic friction characteristic record is activated.
The friction characteristic is recorded at the next power-on command.
Remedy: Not necessary.
The alarm disappears automatically after the friction characteristic record has been successfully completed or the record is de-activated (p3845 = 0).

F07963
Drive: Friction characteristic record interrupted
Message value: Parameter: %1
Drive object: VECTOR_G
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: The conditions to record the friction characteristic are not fulfilled.
Fault value (r0949, interpret decimal):
0046: Missing enable signals (r0046).
1082: The highest speed value to be approached (p3829) is greater than the maximum speed (p1082).
1084: The highest speed value to be approached (p3829) is greater than the maximum speed (r1084, p1083, p1085).
1087: The highest speed value to be approached (p3829) is greater than the maximum speed (r1087, p1086, p1088).
1110: Friction characteristic record, negative direction selected (p3845) and negative direction inhibited (p1110).
1111: Friction characteristic record, positive direction selected (p3845) and positive direction inhibited (p1111).
1198: Friction characteristic record selected (p3845 > 0) and negative (p1110) and positive directions (p1111) inhibited (r1198).
1300: The control mode (p1300) has not been set to closed-loop speed control.
1755: For encoderless closed-loop control (p1300 = 20), the lowest speed value to be approached (p3820) is less than or equal to the changeover speed, open-loop controlled operation (p1755).
1910: Motor data identification activated.
1960: Speed controller optimization activated.
3820 ... 3829: Speed (p382x) cannot be approached.
3840: Friction characteristic incorrect.
3845: Friction characteristic record de-selected.
Remedy:
Fulfill the conditions to record the friction characteristic.
Re fault value = 0046:
- establish missing enable signals.
Re fault value = 1082, 1084, 1087:
- Select the highest speed value to be approached (p3829) less than or equal to the maximum speed (p1082, r1084, r1087).
- Re-calculate the speed points along the friction characteristic (p0340 = 5).
For fault value = 1110:
- Select the friction characteristic record, positive direction (p3845).
For fault value = 1111:
- Select the friction characteristic record, negative direction (p3845).
For fault value = 1198:
- Enable the permitted direction (p1110, p1111, r1198).
For fault value = 1300:
- Set the control mode (p1300) on the closed-loop speed control (p1300 = 20, 21).
For fault value = 1755:
- For encoderless closed-loop speed control (p1300 = 20) select the lowest speed value to be approached (p3820) greater than the changeover speed of open-loop controlled operation (p1755).
- Re-calculate the speed points along the friction characteristic (p0340 = 5).
For fault value = 1910:
- Exit the motor data identification routine (p1910).
For fault value = 1960:
- Exit the speed controller optimization routine (p1960).
Re fault value 3820 ... 3829:
- check the load at speed p382x.
- check the speed signal (r0063) for oscillation at speed p382x. Check the settings of the speed controller if applicable.
For fault value = 3840:
- Make the friction characteristic error-free (p3820 ... p3829, p3830 ... p3839, p3840).
For fault value = 3845:
- Activate the friction characteristic record (p3845).

---

**F07967 Drive: Automatic encoder adjustment incorrect**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** OFF2 (NONE, OFF1)
- **Acknowledge:** IMMEDIATELY
- **Cause:** A fault has occurred during the automatic encoder adjustment or the pole position identification. Only for internal Siemens troubleshooting.
- **Remedy:** Carry out a POWER ON.

---

**F07968 Drive: Lq-Ld measurement incorrect**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** A fault has occurred during the Lq-Ld measurement.
  Fault value (r0949, interpret decimal):
  10: Stage 1: The ratio between the measured current and zero current is too low.
  12: Stage 1: The maximum current was exceeded.
  15: Second harmonic too low.
  16: Drive converter too small for the measuring technique.
  17: Abort due to pulse inhibit.
- **Remedy:**
  For fault value = 10:
  Check whether the motor is correctly connected.
  Replace the power unit involved.
  De-activate technique (p1909).
  For fault value = 12:
  Check whether motor data have been correctly entered.
  De-activate technique (p1909).
  For fault value = 16:
  De-activate technique (p1909).
  For fault value = 17:
  Repeat technique.

---

**F07969 Drive: Incorrect pole position identification**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** A fault has occurred during the pole position identification routine.
  Fault value (r0949, interpret decimal):
  1: Current controller limited
  2: Motor shaft locked
  4: Encoder speed signal not plausible.
  10: Stage 1: The ratio between the measured current and zero current is too low.
  11: Stage 2: The ratio between the measured current and zero current is too low.
  12: Stage 1: The maximum current was exceeded.
  13: Stage 2: The maximum current was exceeded.
List of faults and alarms

14: Current difference to determine the +d axis too low.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.
18: First harmonic too low.
20: Pole position identification requested with the motor shaft rotating and activated "flying restart" function.

Remedy:

For fault value = 1:
- Check whether the motor is correctly connected.
- Check whether motor data have been correctly entered.
- Replace the Motor Module involved.

For fault value = 2:
- Open the motor holding brake (p1215 = 2) and bring the motor into a no-load condition.
- Check whether the encoder pulse number (p0408) and gearbox factor (p0432, p0433) are correct.
- Check whether the motor pole pair number is correct (p0314).

For fault value = 4:
- Check whether the encoder pulse number (p0408) and gearbox factor (p0432, p0433) are correct.
- Check whether the motor pole pair number is correct (p0314).

For fault value = 10:
- When selecting p1980 = 4: Increase the value for p0325.
- When selecting p1980 = 1: Increase the value for p0329.
- Check whether the motor is correctly connected.
- Replace the Motor Module involved.

For fault value = 11:
- Increase the value for p0329.
- Check whether the motor is correctly connected.
- Replace the Motor Module involved.

For fault value = 12:
- When selecting p1980 = 4: Reduce the value for p0325.
- When selecting p1980 = 1: Reduce the value for p0329.
- Check whether motor data have been correctly entered.

For fault value = 13:
- Reduce the value for p0329.
- Check whether motor data have been correctly entered.

For fault value = 14:
- Increase the value for p0329.
- Motor not sufficiently anisotropic, change the technique (p1980 = 1 or 10).

For fault value = 15:
- Increase the value for p0325.
- Motor not sufficiently anisotropic, change the technique (p1980 = 1 or 10).

For fault value = 16:
- De-activate technique (p1982).

For fault value = 17:
- Repeat technique.

For fault value = 18:
- Increase the value for p0329.
- Saturation not sufficient, change the technique (p1980 = 10).

For fault value = 20:
- Before carrying out a pole position identification routine ensure that the motor shaft is absolutely stationary (zero speed).

---

F07970 Drive: Automatic encoder adjustment incorrect

Message value: %1
Drive object: VECTOR_G
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
A fault has occurred during the automatic encoder adjustment.
Fault value (r0949, interpret decimal):
1: Current controller limited
2: Motor shaft locked.
4: Encoder speed signal not plausible.
5: Deselect U/f (p1300) or deactivate encoder calibration (p1990).
10: Stage 1: The ratio between the measured current and zero current is too low.
11: Stage 2: The ratio between the measured current and zero current is too low.
12: Stage 1: The maximum current was exceeded.
13: Stage 2: The maximum current was exceeded.
14: Current difference to determine the +d axis too low.
15: Second harmonic too low.
16: Drive converter too small for the measuring technique.
17: Abort due to pulse inhibit.

Remedy:
For fault value = 1:
Check whether the motor is correctly connected.
Check whether motor data have been correctly entered.
Replace the power unit involved.
For fault value = 2:
Open the motor holding brake (p1215 = 2) and bring the motor into a no-load condition.
For fault value = 4:
Check whether the speed actual value inversion is correct (p0410.0).
Check whether the motor is correctly connected.
Check whether the encoder pulse number (p0408) and gearbox factor (p0432, p0433) are correct.
Check whether the motor pole pair number is correct (p0314).
For fault value = 5:
Deselect U/f (p1300) or deactivate encoder calibration (p1990).
For fault value = 10:
Increase the value for p0325.
Check whether the motor is correctly connected.
Replace the power unit involved.
For fault value = 11:
Increase the value for p0329.
Check whether the motor is correctly connected.
Replace the power unit involved.
For fault value = 12:
Reduce the value for p0325.
Check whether motor data have been correctly entered.
For fault value = 13:
Reduce the value for p0329.
Check whether motor data have been correctly entered.
For fault value = 14:
Increase the value for p0329.
For fault value = 15:
Increase the value for p0325.
For fault value = 16:
De-activate technique (p1982).
For fault value = 17:
Repeat technique.

A07971 (N)  Drive: Angular commutation offset determination activated
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The automatic determination of the angular commutation offset (encoder adjustment) is activated (p1990 = 1,3).
The automatic determination is carried out at the next power-on command.
See also:  p1990 (Encoder adjustment, determine angular commutation offset)
Remedy:  Not necessary.
The alarm automatically disappears after determination or for the setting p1990 = 0.
Reaction upon N:  NONE
Acknowl. upon N:  NONE
A07975 (N)  Drive: Travel to the zero mark - setpoint input expected
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The zero mark must be evaluated in order to adjust the encoder. 
        It is expected that a speed or torque setpoint is entered. 
        See also: p1990 (Encoder adjustment, determine angular commutation offset)
Remedy:  Not necessary. 
        The alarm disappears once the zero mark has been detected.
Reaction upon N:  NONE
Acknowl. upon N:  NONE

A07976  Drive: Fine encoder calibration activated
Message value:  Parameter: %1
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The alarm indicates the phases of the fine encoder calibration using an alarm value. 
        Alarm value (interpret decimal):
        1: Fine encoder calibration active.
        2: Rotating measurement started (set the setpoint speed > 40 % rated motor speed)
        3: Rotating measurement lies within the speed and torque range.
        4: Rotating measurement successful: pulse inhibit can be initiated to accept the values.
        5: Fine encoder calibration is calculated.
        10: Speed too low, rotating measurement interrupted.
        12: Torque too high, rotating measurement interrupted.
        See also: p1905 (Parameter tuning selection)
Remedy:  Re alarm value = 10: 
        Increase the speed.
        Re alarm value = 12: 
        Bring the drive into a no-load condition.

A07980  Drive: Rotating measurement activated
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The rotating measurement (automatic speed controller optimization) is activated. 
        The rotating measurement is carried out at the next power-on command. 
        See also: p1960 (Rotating measurement selection)
Remedy:  Not necessary. 
        The alarm disappears automatically after the speed controller optimization has been successfully completed or for 
        the setting p1900 = 0.

A07981  Drive: Enable signals for the rotating measurement missing
Message value:  -
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The rotating measurement cannot be started due to missing enable signals.
Remedy:  - acknowledge faults that are present. 
        - establish missing enable signals. 
        See also: r0002, r0046
# Faults and alarms

## List of faults and alarms

### F07982  
**Drive:** Rotating measurement encoder test

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (NONE, OFF2)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause:         | A fault has occurred during the encoder test. Fault value (r0949, interpret decimal):  
1: The speed did not reach a steady-state condition.  
2: The speed setpoint was not able to be approached as the minimum limiting is active.  
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.  
4: The speed setpoint was not able to be approached as the maximum limiting is active.  
5: The encoder does not supply a signal.  
6: Incorrect polarity.  
7: Incorrect pulse number.  
8: Noise in the encoder signal or speed controller unstable.  
9: Voltage Sensing Module (VSM) incorrectly connected. |
| Remedy:        | For fault value = 1:  
- check the motor parameters.  
- carry out a motor data identification routine (p1910).  
- if required, reduce the dynamic factor (p1967 < 25 %).  
For fault value = 2:  
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).  
For fault value = 3:  
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).  
For fault value = 4:  
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).  
For fault value = 5:  
- check the encoder connection. If required, replace the encoder.  
For fault value = 6:  
- check the connection assignment of the encoder cable. Adapt the polarity (p0410).  
For fault value = 7:  
- adapt the pulse number (p0408).  
For fault value = 8:  
- check the encoder connection and encoder cable. It is possible that there is a problem associated with the ground connection.  
- reduce the dynamic response of the speed controller (p1460, p1462 and p1470, p1472).  
For fault value = 9:  
- check the connections of the Voltage Sensing Module (VSM).  
Note:  
The encoder test can be switched out (disabled) using p1959.0. See also: p1959 (Rotating measurement configuration) |

### F07983  
**Drive:** Rotating measurement saturation characteristic

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (NONE, OFF2)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause:         | A fault has occurred while determining the saturation characteristic. Fault value (r0949, interpret decimal):  
1: The speed did not reach a steady-state condition.  
2: The rotor flux did not reach a steady-state condition.  
3: The adaptation circuit did not reach a steady-state condition.  
4: The adaptation circuit was not enabled.  
5: Field weakening active.  
6: The speed setpoint was not able to be approached as the minimum limiting is active.  
7: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.  
8: The speed setpoint was not able to be approached as the maximum limiting is active.  
9: Several values of the determined saturation characteristic are not plausible.  
10: Saturation characteristic could not be sensibly determined because load torque too high. |
Faults and alarms

List of faults and alarms

Remedy:

For fault value = 1:
- the total drive moment of inertia is far higher than that of the motor (p0341, p0342). De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
Re fault value = 1 ... 2:
- increase the measuring speed (p1961) and repeat the measurement.
Re fault value = 1 ... 4:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 5:
- the speed setpoint (p1961) is too high. Reduce the speed.
For fault value = 6:
- adapt the speed setpoint (p1961) or minimum limiting (p1080).
For fault value = 7:
- adapt the speed setpoint (p1961) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 8:
- adapt the speed setpoint (p1961) or maximum limit (p1082, p1083 and p1086).
Re fault value = 9, 10:
- the measurement was carried out at an operating point where the load torque is too high. Select a more suitable operating point, either by changing the speed setpoint (p1961) or by reducing the load torque. The load torque may not be varied while making measurements.
Note:
The saturation characteristic identification routine can be disabled using p1959.1.
See also: p1959 (Rotating measurement configuration)

F07984 Drive: Speed controller optimization, moment of inertia

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause:
A fault has occurred while identifying the moment of inertia.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3. The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4. The speed setpoint was not able to be approached as the maximum limiting is active.
5: It is not possible to increase the speed by 10% as the minimum limiting is active.
6: It is not possible to increase the speed by 10% as the suppression (skip) bandwidth is active.
7: It is not possible to increase the speed by 10% as the maximum limiting is active.
8: The torque difference after the speed setpoint step is too low in order to be able to still reliably identify the moment of inertia.
9: Too few data to be able to reliably identify the moment of inertia.
10: After the setpoint step, the speed either changed too little or in the incorrect direction.
11: The identified moment of inertia is not plausible.

Remedy:
For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
Re fault value = 2, 5:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
Re fault value = 3, 6:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
Re fault value = 4, 7:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 8:
- the total drive moment of inertia is far higher than that of the motor (refer to p0341, p0342). De-select rotating measurement (p1960), enter the moment of inertia p0342, re-calculate the speed controller p0340 = 4 and repeat the measurement.
For fault value = 9:
- check the moment of inertia (p0341, p0342). After the change, re-calculate (p0340 = 3 or 4).
For fault value = 10:
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.

Note:
The moment of inertia identification routine can be disabled using p1959.2.
See also: p1959 (Rotating measurement configuration)

F07985 Drive: Speed controller optimization (oscillation test)

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause:
A fault has occurred during the vibration test.
Fault value (r0949, interpret decimal):
1: The speed did not reach a steady-state condition.
2: The speed setpoint was not able to be approached as the minimum limiting is active.
3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active.
4: The speed setpoint was not able to be approached as the maximum limiting is active.
5: Torque limits too low for a torque step.
6: No suitable speed controller setting was found.

Remedy:
For fault value = 1:
- check the motor parameters (rating plate data). After the change: Calculate p0340 = 3.
- check the moment of inertia (p0341, p0342). After the change: Calculate p0340 = 3.
- carry out a motor data identification routine (p1910).
- if required, reduce the dynamic factor (p1967 < 25 %).
For fault value = 2:
- adapt the speed setpoint (p1965) or adapt the minimum limit (p1080).
For fault value = 3:
- adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101).
For fault value = 4:
- adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086).
For fault value = 5:
- increase the torque limits (e.g. p1520, p1521).
For fault value = 6:
- reduce the dynamic factor (p1967).
- disable the vibration test (p1959.4 = 0) and repeat the rotating measurement.
See also: p1959 (Rotating measurement configuration)

F07986 Drive: Rotating measurement ramp-function generator

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY
Cause:
During the rotating measurements, problems with the ramp-function generator occurred.
Fault value (r0949, interpret decimal):
1: The positive and negative directions are inhibited.

Remedy:
For fault value = 1:
Enable the direction (p1110 or p1111).

A07987 Drive: Rotating measurement, no encoder available

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
No encoder available. The rotating measurement was carried out without encoder.

Remedy:
Connect encoder or select p1960 = 1, 3.
### Faults and alarms

#### List of faults and alarms

<table>
<thead>
<tr>
<th>Fault ID</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07988</td>
<td>Drive: Rotating measurement, no configuration selected</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF2 (NONE, OFF1)</td>
<td>IMMEDIATELY</td>
<td>When configuring the rotating measurement (p1959), no function was selected.</td>
<td>Select at least one function for automatic optimization of the speed controller (p1959). See also: p1959 (Rotating measurement configuration)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fault ID</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07989</td>
<td>Drive: Rotating measurement leakage inductance (q-axis)</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF1 (NONE, OFF2)</td>
<td>IMMEDIATELY</td>
<td>An error has occurred while measuring the dynamic leakage inductance. Fault value (r0949, interpret decimal): 1: The speed did not reach a steady-state condition. 2: The speed setpoint was not able to be approached as the minimum limiting is active. 3: The speed setpoint was not able to be approached as the suppression (skip) bandwidth is active. 4: The speed setpoint was not able to be approached as the maximum limiting is active. 5: The 100% flux setpoint was not reached. 6: No Lq measurement possible because field weakening is active. 7: Speed actual value exceeds the maximum speed p1082 or 75% of the rated motor speed. 8: Speed actual value is below 2% of the rated motor speed.</td>
<td>For fault value = 1: - check the motor parameters. - if required, reduce the dynamic factor (p1967 &lt; 25%). For fault value = 2: - adapt the speed setpoint (p1965) or adapt the minimum limit (p1080). For fault value = 3: - adapt the speed setpoint (p1965) or suppression (skip) bandwidths (p1091 ... p1094, p1101). For fault value = 4: - adapt the speed setpoint (p1965) or maximum limit (p1082, p1083 and p1086). For fault value = 5: - flux setpoint p1570 = 100% and current setpoint p1610 = 0% kept during the Lq measurement. For fault value = 6: - reduce the regenerative load so that the drive does not reach field weakening when accelerating. - reduce p1965 so that the q leakage inductance is recorded at lower speeds. For fault value = 7: - increase p1082 if this is technically permissible. - reduce p1965 so that the q leakage inductance is recorded at lower speeds. For fault value = 8: - reduce the load when motoring so that the drive is not braked. - increase p1965 so that the measurement may be taken at higher speeds. Note: The measurement of the q leakage inductance can be disabled using p1959.5. If only p1959.5 is set, then only this measurement is carried out if p1960 is set to 1, 2 and the drive is powered up. See also: p1959 (Rotating measurement configuration)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fault ID</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07990</td>
<td>Drive: Incorrect motor data identification</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF2 (NONE, OFF1)</td>
<td>IMMEDIATELY</td>
<td>A fault has occurred during the identification routine. Fault value (r0949, interpret decimal): 1: Current limit value reached. 2: Identified stator resistance lies outside the expected range 0.1 ... 100% of Zn.</td>
<td></td>
</tr>
</tbody>
</table>
List of faults and alarms

3: Identified rotor resistance lies outside the expected range 0.1 ... 100% of Zn. Separately excited synchronous motors: damping resistance outside 1.0 ... 15% of Zn.
4: Identified stator reactance lies outside the expected range 50 ... 900% of Zn. Separately excited synchronous motors: stator reactance outside 20 ... 500% of Zn.
5: Identified magnetizing reactance lies outside the expected range 50 ... 900% of Zn. Separately excited synchronous motors: magnetizing reactance outside 20 ... 500% of Zn.
6: Identified rotor time constant lies outside the expected range 10 ms ... 5 s. Separately-excited synchronous motors: damping time constant outside of 5 ms ... 1 s.
7: Identified total leakage reactance lies outside the expected range 4 ... 100% of Zn.
8: Identified stator leakage reactance lies outside the expected range 2 ... 50% of Zn. Separately excited synchronous motors: stator leakage reactance outside 2 ... 40% of Zn.
9: Identified rotor leakage reactance lies outside the expected range 2 ... 50% of Zn. Separately excited synchronous motors: damping leakage reactance outside 1.5 ... 20% of Zn.
10: Motor has been incorrectly connected.
11: Motor shaft rotates.
12: Ground fault detected.
20: Identified threshold voltage of the semiconductor devices lies outside the expected range 0 ... 10 V.
30: Current controller in voltage limiting.
40: At least one identification contains errors. The identified parameters are not saved to prevent inconsistencies.
50: The selected sampling time is too low for the motor identification (p0115[0]).

Note: Percentage values are referred to the rated motor impedance:

\[ Z_n = \frac{V_{mot,nom}}{\sqrt{3}} / \frac{I_{mot,nom}}{\sqrt{3}} \]

Remedy:

Re fault value = 1 ... 40:
- check whether motor data have been correctly entered in p0300, p0304 ... p0311.
- is there an appropriate relationship between the motor power rating and that of the Motor Module? The ratio of the Motor Module to the rated motor current should not be less than 0.5 and not be greater than 4.
- check configuration (star-delta).
Re fault value = 11 in addition:
- Deactivate oscillation monitoring (p1909.7 = 1).
For fault value = 2:
- for parallel circuits, check the motor winding system in p7003. If, for power units connected in parallel, a motor is specified with a single-winding system (p7003 = 0), although a multi-winding system is being used, then a large proportion of the stator resistance is interpreted as feeder cable resistance and entered in p0352.
Re fault value = 4, 7:
- check whether inductances are correctly set in p0233 and p0353.
- check whether motor has been correctly connected (star-delta).
- Set p1909.0 = 1.
For fault value = 12:
- check the power cable connections.
- check the motor.
- check the CT.
For fault value = 50:
- Perform a motor data identification with a higher sampling time, and after this, change to the required higher sampling time (p0115[0]).

A07991 (N) Drive: Motor data identification activated

Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The motor data identification routine is activated.
The motor data identification routine is carried out at the next power-on command.
If rotating measurement is selected (see p1900, p1960), it will not be possible to save the parameter assignment. Once motor data identification has been completed or de-activated, the option to save the parameter assignment will be made available again.
See also: p1910 (Motor data identification selection)

Remedy: Not necessary.
The alarm automatically disappears after the motor data identification routine has been successfully completed or for the setting p1900 = 0.

Reaction upon N: NONE
Acknowl. upon N: NONE
### Faults and alarms

#### List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A07994 (F, N)</td>
<td>Drive: motor data identification not performed</td>
<td>-</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The &quot;vector control&quot; mode has been selected and a motor data identification has still not been performed. The alarm is initiated when changing the drive data set (see r0051) in the following cases: - vector control is parameterized in the actual drive data set (p1300 &gt;= 20). and - motor data identification has still not been performed in the actual drive data set (see r3925). Note: For SINAMICS G120, a check is made and an alarm is output also when exiting commissioning and when the system powers up.</td>
<td></td>
</tr>
<tr>
<td>F08000 (N, A)</td>
<td>TB: +/-15 V power supply faulted</td>
<td>%1</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>Terminal Board 30 detects an incorrect internal power supply voltage. Fault value (r0949, interpret decimal): 0: Error when testing the monitoring circuit. 1: Fault in normal operation.</td>
<td></td>
</tr>
<tr>
<td>F08010 (N, A)</td>
<td>TB: Analog-digital converter</td>
<td>-</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The analog/digital converter on Terminal Board 30 has not supplied any converted data. Remedy: - check the power supply. - replace Terminal Board 30.</td>
<td></td>
</tr>
<tr>
<td>Fault Code</td>
<td>Description</td>
<td>Message Value</td>
<td>Drive Object</td>
<td>Reaction</td>
<td>Acknowledge</td>
<td>Cause</td>
<td>Remedy</td>
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<tr>
<td>F08500 (A)</td>
<td>COMM BOARD: Monitoring time configuration expired</td>
<td>%1</td>
<td>All objects</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The monitoring time for the configuration has expired.</td>
<td>Check communications link.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vector: OFF1 (OFF2, OFF3)</td>
<td></td>
<td>If the transfer time of the send configuration data has been exceeded.</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>If the transfer time of the receive configuration data has been exceeded.</td>
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<td></td>
<td>Cause:</td>
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</tr>
<tr>
<td>F08501 (N, A)</td>
<td>COMM BOARD: Setpoint timeout</td>
<td>-</td>
<td>All objects</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The reception of setpoints from the COMM BOARD has been interrupted.</td>
<td>- Restore the bus connection and set the controller to RUN.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vector: OFF3 (IASC/DCBRAKE, NONE, OFF1, OFF2, STOP1, STOP2)</td>
<td></td>
<td>- bus connection interrupted.</td>
<td>- check the set monitoring time if the error persists.</td>
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<td>- controller switched off.</td>
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<td></td>
<td>- controller set into the STOP state.</td>
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<td></td>
<td>- COMM BOARD defective.</td>
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<td></td>
<td>Cause:</td>
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<td></td>
<td>See also: p8840 (COMM BOARD monitoring time)</td>
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<td>Reaction upon A: NONE</td>
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<td>Acknowl. upon A: NONE</td>
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<td></td>
</tr>
<tr>
<td>F08502 (A)</td>
<td>COMM BOARD: Monitoring time sign-of-life expired</td>
<td>-</td>
<td>All objects</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The monitoring time for the sign-of-life counter has expired.</td>
<td>Check communications link.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Vector: OFF1 (OFF2, OFF3)</td>
<td></td>
<td>The connection to the COMM BOARD was interrupted.</td>
<td></td>
</tr>
<tr>
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<td></td>
<td>Cause:</td>
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<td></td>
<td>Remedy:</td>
<td></td>
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<td></td>
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<td></td>
<td>Acknowl. upon A: NONE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A08504 (F)</td>
<td>COMM BOARD: Internal cyclic data transfer error</td>
<td>%1</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The cyclic actual and/or setpoint values were not transferred within the specified times.</td>
<td>Check the parameterizing telegram (Ti, To, Tdp, etc.).</td>
</tr>
<tr>
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<td></td>
<td>Cause:</td>
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<td></td>
<td></td>
<td>Remedy:</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

**F08510 (A)**  
**COMM BOARD: Send configuration data invalid**

**Message value:** %1

**Drive object:** All objects

**Reaction:** Infeed: OFF1 (OFF2)
Vector: OFF1 (OFF2, OFF3)

**Acknowl.:** IMMEDIATELY

**Cause:** COMM BOARD did not accept the send-configuration data.

Fault value (r0949, interpret decimal):
Return value of the send-configuration data check.

**Remedy:** Check the send configuration data.

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

**A08511 (F)**  
**COMM BOARD: Receive configuration data invalid**

**Message value:** %1

**Drive object:** All objects

**Reaction:** NONE

**Acknowl.:** NONE

**Cause:** The drive unit did not accept the receive configuration data.

Alarm value (r2124, interpret decimal):
Return value of the receive configuration data check.

1: Connection established to more drive objects than configured in the device. The drive objects for process data exchange and their sequence are defined in p0978.
2: Too many PZD data words for output or input to a drive object. The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051 for PZD IF1, and in r8850/p8851 for PZD IF2.
3: Uneven number of bytes for input or output.
4: Setting data for synchronization not accepted. For more information, see A01902.
5: Cyclic operation not active.
17: CBE20 Shared Device: Configuration of the F-CPU has been changed.
223: Illegal clock synchronization for the PZD interface set in p8815[0].
500: Illegal PROFlsafe configuration for the interface set in p8815[1].
501: PROFlsafe parameter error (e.g. F_dest).
503: PROFlsafe connection is rejected as long as there is no isochronous connection (p8969).

**Remedy:** Check the receive configuration data.

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

**Remedy values:**
- Re alarm value = 2:
  - Check the list of the drive objects with process data exchange (p0978). With p0978[x] = 0, all of the following drive objects in the list are excluded from the process data exchange.
  - Check the number of data words for output and input to a drive object.
- Re alarm value = 17:
  - CBE20 Shared Device: Unplug/plug A-CPU.
- Re alarm value = 223, 500:
  - Check the setting in p8839 and p8815.
  - Ensure that only one PZD interface is operated in clock synchronism or with PROFlsafe.
- Re alarm value = 501:
  - Check the set PROFlsafe address (p9610).

**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY
### A08520 (F) COMM BOARD: Non-cyclic channel error

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>The memory or the buffer status of the non-cyclic channel has an error.</td>
</tr>
<tr>
<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>0: Error in the buffer status.</td>
</tr>
<tr>
<td></td>
<td>1: Error in the memory.</td>
</tr>
<tr>
<td>Remedy</td>
<td>Check communications link.</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td></td>
<td>Vector: NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### A08526 (F) COMM BOARD: No cyclic connection

<table>
<thead>
<tr>
<th>Message value</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>There is no cyclic connection to the control.</td>
</tr>
<tr>
<td>Remedy</td>
<td>Establish the cyclic connection and activate the control with cyclic operation.</td>
</tr>
<tr>
<td></td>
<td>For PROFINET, check the parameters &quot;Name of Station&quot; and &quot;IP of Station&quot; (r61000, r61001).</td>
</tr>
<tr>
<td></td>
<td>If a CBE20 is inserted and PROFIBUS is to communicate via PZD Interface 1, then this must be parameterized using the STARTER commissioning tool or directly using p8839.</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE (OFF1)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### A08530 (F) COMM BOARD: Message channel error

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>The memory or the buffer status of the message channel has an error.</td>
</tr>
<tr>
<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>0: Error in the buffer status.</td>
</tr>
<tr>
<td></td>
<td>1: Error in the memory.</td>
</tr>
<tr>
<td>Remedy</td>
<td>Check communications link.</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td></td>
<td>Vector: NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### A08550 PZD Interface Hardware assignment error

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>The assignment of the hardware to the PZD interface has been incorrectly parameterized.</td>
</tr>
<tr>
<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>1: Only one of the two indices is not equal to 99 (automatic).</td>
</tr>
<tr>
<td></td>
<td>2: Both PZD interfaces are assigned to the same hardware.</td>
</tr>
<tr>
<td></td>
<td>3: Assigned COMM BOARD missing.</td>
</tr>
<tr>
<td></td>
<td>4: CBC10 is assigned to interface 1.</td>
</tr>
<tr>
<td></td>
<td>See also: p8839 (PZD interface hardware assignment)</td>
</tr>
<tr>
<td>Remedy</td>
<td>Check the parameterization and if required, correct (p8839).</td>
</tr>
</tbody>
</table>
### Faults and alarms

**List of faults and alarms**

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| A08560    | **IE: Syntax error in configuration file**       | -             | All objects  | NONE     | NONE        | A syntax error has been detected in the ASCII configuration file for the Industrial Ethernet interface (X127). The saved configuration file has not been loaded. Note: IE: Industrial Ethernet | - Check the interface configuration (p8900 and following), correct if necessary, and activate (p8905 = 1).  
- Save the parameters for interface configuration (e.g. p8905 = 2)  
or  
- Reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software). See also: p8905 (IE Interface configuration) |
| A08561    | **IE: Consistency error affecting adjustable parameters** | -             | All objects  | NONE     | NONE        | A consistency error was detected when activating the configuration (p8905 = 1) for the Industrial Ethernet interface (X127). The currently set configuration has not been activated. Possible causes:  
- IP address, subnet mask or default gateway is not correct  
- IP address or station name used twice in the network  
- station name contains invalid characters, etc. Note: IE: Industrial Ethernet | See also: p8900 (IE Name of Station), p8901 (IE IP Address of Station), p8902 (IE Default Gateway of Station), p8903 (IE Subnet Mask of Station)  
Remedy:  
- Check the required interface configuration (p8900 and following), correct if necessary, and activate (p8905 = 1).  
or  
- Reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software). See also: p8905 (IE Interface configuration) |
| A08562    | **PROFINET: Syntax error in configuration file** | -             | All objects  | NONE     | NONE        | A syntax error has been detected in the ASCII configuration file for the onboard PROFINET interface. The saved configuration file has not been loaded. | - Check the interface configuration (p8920 and following), correct if necessary, and activate (p8925 = 1).  
- Save the parameters for interface configuration (e.g. p8925 = 2).  
or  
- Reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software). See also: p8925 (PN interface configuration) |
| A08563    | **PROFINET: Consistency error affecting adjustable parameters** | -             | All objects  | NONE     | NONE        | A consistency error was detected when activating the configuration (p8925 = 1) for the onboard PROFINET interface. The currently set configuration has not been activated. Possible causes:  
- IP address, subnet mask or default gateway is not correct |
- IP address or station name used twice in the network
- station name contains invalid characters, etc.

See also: p8920 (PN Name of Station), p8921 (PN IP address of station), p8922 (PN Default Gateway of Station), p8923 (PN Subnet Mask of Station)

**Remedy:**
- Check the required interface configuration (p8940 and following), correct if necessary, and activate (p8945 = 1).
- Reconfigure the station via the "Edit Ethernet node" screen form (e.g. with STARTER commissioning software).
- See also: p8925 (PN interface configuration)

<table>
<thead>
<tr>
<th>A08564</th>
<th>CBE20: Syntax error in configuration file</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>A syntax error has been detected in the ASCII configuration file for the Communication Board Ethernet 20 (CBE20). The saved configuration file has not been loaded.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- Check the CBE20 configuration (p8940 and following), correct if necessary, and activate (p8945 = 2).</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The configuration is not applied until the next POWER ON!</td>
</tr>
<tr>
<td><strong>See also:</strong></td>
<td>p8945 (CBE20 interface configuration)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A08565</th>
<th>CBE20: Consistency error affecting adjustable parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>
| **Cause:** | A consistency error was detected when activating the configuration (p8945 = 1) for the Communication Board Ethernet 20 (CBE20). The currently set configuration has not been activated. Possible causes:
- IP address, subnet mask or default gateway is not correct
- IP address or station name used twice in the network
- station name contains invalid characters, etc. |
| **Remedy:** | Check the required interface configuration (p8940 and following), correct if necessary, and activate (p8945 = 1). |
| **See also:** | p8945 (CBE20 interface configuration) |

<table>
<thead>
<tr>
<th>F08700 (A)</th>
<th>CAN: Communications error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: NONE (OFF1, OFF2) Vector: OFF3 (NONE, OFF1, OFF2)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| **Cause:** | A CAN communications error has occurred. Fault value (r0949, interpret decimal):
1. The error counter for the send telegrams has exceeded the BUS OFF value 255. The bus disables the CAN controller.
- bus cable short circuit.
- incorrect baud rate.
- incorrect bit timing.
2. The master no longer interrogated the CAN node status longer than for its "life time". The "life time" is obtained from the "guard time" (p8604[0]) multiplied by the "life time factor" (p8604[1]).
- bus cable interrupted.
- bus cable not connected.
- incorrect baud rate.
- incorrect bit timing.
- master fault. |

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Faults and alarms

**List of faults and alarms**

Note:
The fault response can be set as required using p8641.
See also: p8604 (CAN node guarding), p8641 (CAN Abort Connection Option Code)

**Remedy:**
- check the bus cable
- check the baud rate (p8622).
- check the bit timing (p8623).
- check the master.
The CAN controller must be manually restarted with **p8608 = 1** after the cause of the fault has been resolved!
See also: p8608 (CAN Clear Bus Off Error), p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)

**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F08701 CAN: NMT state change</td>
<td>%1</td>
</tr>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infeed: OFF2</td>
</tr>
<tr>
<td></td>
<td>Vector: OFF3</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause: | A CANopen NMT state transition from "operational" to "pre-operational" or after "stopped". Fault value (r0949, interpret decimal):
1: CANopen NMT state transition from "operational" to "pre-operational".
2: CANopen NMT state transition from "operational" to "stopped". |
| Note: | In the NMT state "pre-operational", process data cannot be transferred and in the NMT state "stopped", no process data and no service data can be transferred. |
| Remedy: | Not necessary. |
| Acknowledge the fault and continue operation. |

| F08702 (A) CAN: RPDO Timeout | - |
| Message value: | - |
| Drive object: | All objects |
| Reaction: | Infeed: OFF2 (NONE, OFF1) |
| | Vector: OFF3 (NONE, OFF1, OFF2) |
| Acknowledge: | IMMEDIATELY |
| Cause: | The monitoring time of the CANopen RPDO telegram has expired because the bus connection was either interrupted or the CANopen Master was switched-off. See also: p8699 (CAN: RPDO monitoring time) |
| Remedy: | - check the bus cable |
| | - check the master. |
| | - If required, increase the monitoring time (p8699). |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |

| F08703 (A) CAN: Maximum number of drive objects exceeded | - |
| Message value: | - |
| Drive object: | All objects |
| Reaction: | Infeed: OFF2 (NONE, OFF1) |
| | Vector: OFF3 (NONE, OFF1, OFF2) |
| Acknowledge: | IMMEDIATELY |
| Cause: | The maximum number of 8 drive objects with the "CAN" function module was exceeded. |
| Note: | In the CANopen standard only a maximum of 8 drive objects are defined for each CANopen slave. |
| Remedy: | - New commissioning of maximum 8 drive objects with the "CAN" function module in the topology. |
| | - For the drive objects, if required, deselect the "CAN" function module (r0108.29). |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |
### List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A08751</td>
<td>CAN: Telegram loss</td>
<td>-</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The CAN controller has lost a receive message (telegram).</td>
<td>Reduce the cycle times of the receive messages.</td>
</tr>
<tr>
<td>A08752</td>
<td>CAN: Error counter for error passive exceeded</td>
<td>-</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The error counter for the send or receive telegrams has exceeded the value 127.</td>
<td>- check the bus cable&lt;br&gt;- set a higher baud rate (p8622).&lt;br&gt;- check the bit timing and if required optimize (p8623).&lt;br&gt;See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)</td>
</tr>
<tr>
<td>A08753</td>
<td>CAN: Message buffer overflow</td>
<td>%1</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>A message buffer overflow.&lt;br&gt;Alarm value (=2124, interpret decimal): 1: Non-cyclic send buffer (SDO response buffer) overflow. 2: Non-cyclic receive buffer (SDO receive buffer) overflow. 3: Cyclic send buffer (PDO send buffer) overflow.</td>
<td>- check the bus cable&lt;br&gt;- set a higher baud rate (p8622).&lt;br&gt;- check the bit timing and if required optimize (p8623).&lt;br&gt;Re alarm value = 2:&lt;br&gt;- reduce the cycle times of the SDO receive messages.&lt;br&gt;- SDO request from master only after SDO feedback for previous SDO request.&lt;br&gt;See also: p8622 (CAN bit rate), p8623 (CAN Bit Timing selection)</td>
</tr>
<tr>
<td>A08754</td>
<td>CAN: Incorrect communications mode</td>
<td>-</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>In the &quot;operational&quot; mode, an attempt was made to change parameters p8700 ... p8737.</td>
<td>Change to the &quot;pre-operational&quot; or &quot;stopped&quot; mode.</td>
</tr>
<tr>
<td>A08755</td>
<td>CAN: Obj cannot be mapped</td>
<td>-</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The CANopen object is not provided for the Process Data Object (PDO) Mapping.</td>
<td>Use a CANopen object intended for the PDO mapping or enter 0.&lt;br&gt;The following objects can be mapped in the Receive Process Data Object (RPDO) or Transmit Process Data Object (TPDO):&lt;br&gt;- RPDO: 6040 hex, 6060 hex, 60FF hex, 6071 hex; 5800 hex - 580F hex; 5820 hex - 5827 hex</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

- TPDO: 6041 hex, 6061 hex, 6063 hex, 6069 hex, 606B hex, 606C hex, 6074 hex; 5810 hex - 581F hex; 5830 hex - 5837 hex
- Only sub-index 0 of the specified objects can be mapped.

Note:
As long as A08755 is present, the COB-ID cannot be set to valid.

A08756 CAN: Number of mapped bytes exceeded

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The number of bytes of the mapped objects exceeds the telegram size for net data. A max. of 8 bytes is permissible.
Remedy: Map fewer objects or objects with a smaller data type.
See also: p8710, p8711, p8712, p8713, p8714, p8715, p8716, p8717, p8730, p8731, p8732, p8733, p8734, p8735, p8736, p8737

A08757 CAN: Set COB-ID invalid

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: For online operation, the appropriate COB-ID must be set invalid before mapping.
Example:
Mapping for RPDO 1 should be changed (p8710[0]).
--> set p8700[0] = C00006E0 hex (invalid COB-ID)
--> set p8710[0] as required.
--> p8700[0] enter a valid COB-ID
Remedy: Set the COB-ID to invalid.

A08758 CAN: Number of PDO channels too low

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The number of PDO channels in p8740 has either been set to 0 or too low.
See also: p8740 (CAN channel distribution)
Remedy: The number of channels set in p8740 must be greater than or equal to the number of PDOs.
There are 2 possibilities:
Increase the number of channels in p8740 and confirm the selection using p8741.
Reduce the number of PDOs by setting the COB-ID to invalid.
See also: p8740 (CAN channel distribution), p8741 (CAN PDO configuration acknowledgement)

A08759 CAN: PDO COB-ID already available

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: An existing PDO COB-ID was allocated.
Remedy: Select another PDO COB-ID.

A08800 PROFIlenergy energy-saving mode active

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The PROFIlenergy energy-saving mode is active
Faults and alarms

List of faults and alarms

A08802  PROFlenergy not possible to switch off incremental encoder supply
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  The incremental encoder is used for the closed-loop position control. This means that its power supply cannot be switched off during the PROFlenergy energy-saving mode, otherwise it would lose its position actual value.
Alarm value (r2124, interpret decimal):
- Encoder number

Remedy:  The alarm automatically disappears when the energy-saving mode is exited.
Note:  After receiving the PROFlenergy command "End_Pause" via PROFINET, the energy-saving mode is exited.

A13000  License not adequate
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  - for the drive unit, the options that require a license are being used but the licenses are not sufficient.
- an error occurred when checking the existing licenses.
Alarm value (r2124, interpret decimal):
- 0:  The existing license is not sufficient.
- 1:  An adequate license was not able to be determined as the memory card with the required licensing data was withdrawn in operation.
- 2:  An adequate license was not able to be determined as there is no licensing data available on the memory card.
- 3:  An adequate license was not able to be determined as there is a checksum error in the license key.
- 4:  An internal error occurred when checking the license.

Remedy:  Re alarm value = 0:
- Additional licenses are required and these must be activated (p9920, p9921).
Re alarm value = 1:
- With the system powered down, re-insert the memory card that matches the system.
Re alarm value = 2:
- Enter and activate the license key (p9920, p9921).
Re alarm value = 3:
- Compare the license key (p9920) entered with the license key on the certificate of license.
- Re-enter the license key and activate (p9920, p9921).
Re alarm value = 4:
- carry out a POWER ON.
- upgrade firmware to later version.
- contact the Hotline.

A13001  Error in license checksum
Message value:  -
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  When checking the checksum of the license key, an error was detected.
Remedy: Compare the license key (p9920) entered with the license key on the certificate of license. Re-enter the license key and activate (p9920, p9921).

### F13009 Licensing OA application not licensed
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1
- **Acknowledge:** IMMEDIATELY
- **Cause:** At least one OA application which is under license does not have a license.
  - Note: Refer to r4955 and p4955 for information about the installed OA applications.
- **Remedy:**
  - enter and activate the license key for OA applications under license (p9920, p9921).
  - if necessary, de-activate unlicensed OA applications (p4956).
  See also: p9920 (Licensing, enter license key), p9921 (Licensing, activate license key)

### F13010 Licensing function module not licensed
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1
- **Acknowledge:** IMMEDIATELY
- **Cause:** At least one function module which is under license does not have a license.
  - Fault value (r0949, interpret hexadecimal):
    - Bit x = 1: The corresponding function module does not have a license.
  - Note: Refer to p0108 or r0108 for the assignment between the bit number and function module.
- **Remedy:**
  - enter and activate the license key for function modules under license (p9920, p9921).
  - if necessary, de-activate unlicensed function modules (p0108, r0108).
  See also: p9920 (Licensing, enter license key), p9921 (Licensing, activate license key)

### F13100 Know-how protection: Copy protection error
- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** OFF1
- **Acknowledge:** IMMEDIATELY
- **Cause:** The know-how protection with copy protection for the memory card is active.
  - An error has occurred when checking the memory card.
  - Fault value (r0949, interpret decimal):
    - 0: A memory card is not inserted.
    - 2: An invalid memory card is inserted.
    - 3: The memory card is being used in another Control Unit.
    - 12: An invalid memory card is inserted (OEM input incorrect, p7769).
    - 13: The memory card is being used in another Control Unit (OEM input incorrect, p7759).
  - Note: In general, the copy protection can only be changed when know-how protection is deactivated.
- **Remedy:**
  - For fault value = 0:
    - Insert the correct memory card and carry out POWER ON.
  - For fault value = 2, 3, 12, 13:
    - contact the responsible OEM.
    - Deactivate copy protection (p7765) and acknowledge the fault (p3981).
    - Deactivate know-how protection (p7766-p7768) and acknowledge the fault (p3981).
  - Note: KHP: Know-How Protection
  See also: p3981 (Faults, acknowledge drive object), p7765 (KHP memory card copy protection)
F13101  Know-how protection: Copy protection cannot be activated
Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An error occurred when attempting to activate the copy protection for the memory card.
Fault value (r0949, interpret decimal):
0: A memory card is not inserted.
Note:
KHP: Know-How Protection
Remedy:
- insert the memory card and carry out POWER ON.
- Try to activate copy protection again (p7765).
See also: p7765 (KHP memory card copy protection)

F13102  Know-how protection: Consistency error of the protected data
Message value: %1
Drive object: All objects
Reaction: OFF1
Acknowledge: IMMEDIATELY
Cause: An error was identified when checking the consistency of the protected files. As a consequence, the project on the memory card cannot be run.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex: yyyy = object number, xxxx = fault cause
xxxx = 1:
A file has a checksum error.
xxxx = 2:
The files are not consistent with one another.
Note:
KHP: Know-How Protection
Remedy:
- Replace the project on the memory card.
- Restore the factory setting and download again.

F30001  Power unit: Overcurrent
Message value: Fault cause: %1 bin
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected an overcurrent condition.
- closed-loop control is incorrectly parameterized.
- motor has a short-circuit or fault to ground (frame).
- U/f operation: Rated motor current is significantly greater than that of the Motor Module.
- infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- infeed: Short-circuit currents at power-up due to the missing line reactor.
- power cables are not correctly connected.
- the power cables exceed the maximum permissible length.
- power unit defective.
- line phase interrupted.
Additional causes for a parallel switching device (r0108.15 = 1):
- a power unit has tripped (powered down) due to a ground fault.
- the closed-loop circulating current control is either too slow or has been set too fast.
Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.
Bit 3: Overcurrent in the DC link.
Note:
Fault value = 0 means that the phase with overcurrent is not recognized (e.g. for blocksize device).
Faults and alarms

List of faults and alarms

Remedy:
- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star/delta).
- U/f operation: Increase up ramp.
- U/f operation: Check the assignment of the rated currents of the motor and Motor Module.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Check the correct connection of the line filter and the line commutating reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.
- check the line supply phases.
For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).

F30002 Power unit: DC link voltage, overvoltage
Message value: %1
Drive object: B_INF
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected overvoltage in the DC link.
- motor regenerates too much energy.
- device connection voltage too high.
- when operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.
- line phase interrupted.
Fault value (r0949, interpret decimal):
DC link voltage at the time of trip [0.1 V].
Remedy:
- increase the ramp-down time
- activate the DC link voltage controller
- use a brake resistor or Active Line Module
- increase the current limit of the infeed or use a larger module (for the Active Line Module)
- check the device supply voltage
- check and correct the phase assignment at the VSM and at the power unit
- check the line supply phases.
See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)

F30002 Power unit: DC link voltage, overvoltage
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit has detected overvoltage in the DC link.
- motor regenerates too much energy.
- device connection voltage too high.
- when operating with a Voltage Sensing Module (VSM), the phase assignment L1, L2, L3 at the VSM differs from the phase assignment at the power unit.
- line phase interrupted.
Fault value (r0949, interpret decimal):
DC link voltage at the time of trip [0.1 V].
Remedy:
- increase the ramp-down time
- activate the DC link voltage controller
- use a brake resistor or Active Line Module
- increase the current limit of the infeed or use a larger module (for the Active Line Module)
- check the device supply voltage
- check and correct the phase assignment at the VSM and at the power unit
- check the line supply phases.
- set the rounding times (p1130, p1136). This is particularly recommended in U/f operation to relieve the DC link voltage controller with rapid ramp-down times of the ramp-function generator.
See also: p0210 (Drive unit line supply voltage), p1240 (Vdc controller or Vdc monitoring configuration)
### F30003
**Power unit: DC link voltage, undervoltage**

- **Message value:**
  - 
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - The power unit has detected an undervoltage condition in the DC link.
  - line supply failure
  - line supply voltage below the permissible value.
  - line supply infeed failed or interrupted.
  - line phase interrupted.
- **Note:**
  - The monitoring threshold for undervoltage in the DC link is indicated in r0296.
- **Remedy:**
  - check the line supply voltage
  - check the line supply infeed and observe the fault messages relating to it (if there are any)
  - check the line supply phases.
  - check the line supply voltage setting (p0210).
  - booksize units: check the setting of p0278.
- **Note:**
  - The ready signal for the infeed (r0863) must be interconnected to the associated drive inputs (p0864).
  - See also: p0210 (Drive unit line supply voltage)

### F30004
**Power unit: Overtemperature heat sink AC inverter**

- **Message value:** %1
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - The temperature of the power unit heat sink has exceeded the permissible limit value.
  - insufficient cooling, fan failure.
  - overload.
  - ambient temperature too high.
  - pulse frequency too high.
- **Fault value (r0949):**
  - Temperature [1 bit = 0.01 °C]
- **Remedy:**
  - check whether the fan is running.
  - check the fan elements.
  - check whether the ambient temperature is in the permissible range.
  - check the motor load.
  - reduce the pulse frequency if this is higher than the rated pulse frequency.
- **Note:**
  - This fault can only be acknowledged after this alarm threshold for alarm A05000 has been undershot.
  - See also: p1800 (Pulse frequency setpoint)

### F30005
**Power unit: Overload I²t**

- **Message value:** %1
- **Drive object:** B_INF
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - The power unit was overloaded (r0036 = 100 %).
  - the permissible rated power unit current was exceeded for an inadmissibly long time.
  - the permissible load duty cycle was not maintained.
- **Fault value (r0949, interpret decimal):**
  - I²t [100 % = 16384]
- **Remedy:**
  - reduce the continuous load.
  - adapt the load duty cycle.
  - check the motor and power unit rated currents.
- **See also:** r0036 (Power unit overload I²t), r0206 (Rated power unit power), p0307 (Rated motor power)
Faults and alarms

List of faults and alarms

F30005  Power unit: Overload I2t
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The power unit was overloaded (r0036 = 100 %).
- the permissible rated power unit current was exceeded for an inadmissibly long time.
- the permissible load duty cycle was not maintained.
Fault value (r0949, interpret decimal):
I2t [100 % = 16384].
Remedy:
- reduce the continuous load.
- adapt the load duty cycle.
- check the motor and power unit rated currents.
- increase p0294
See also: r0036 (Power unit overload I2t), r0206 (Rated power unit power), p0307 (Rated motor power)

F30006  Power unit: Thyristor Control Board
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The Thyristor Control Board (TCB) of the Basic Line Module signals a fault.
- there is no line supply voltage.
- the line contactor is not closed.
- the line supply voltage is too low.
- line supply frequency outside the permissible range (45 ... 66 Hz).
- there is a DC link short-circuit.
- there is a DC link short-circuit (during the pre-charging phase).
- voltage supply for the Thyristor Control Board outside the nominal range (5 ... 18 V) and line voltage >30 V.
- there is an internal fault in the Thyristor Control Board.
Remedy: The faults must be saved in the Thyristor Control Board and must be acknowledged. To do this, the supply voltage of the Thyristor Control Board must be switched out for at least 10 s!
- check the line supply voltage
- check or energize the line contactor.
- check the monitoring time and, if required, increase (p0857).
- if required, observe additional power unit messages/signals.
- check the DC link regarding short-circuit or ground fault.
- evaluate diagnostic LEDs for the Thyristor Control Board.

F30008  Power unit: Sign-of-life error cyclic data
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The Control Unit has not punctually updated the cyclic setpoint telegram. The number of consecutive sign-of-life errors has exceeded the fault threshold (p7789).
Remedy:
- check the electrical cabinet design and cable routing for EMC compliance
- for projects with the VECTOR drive object, check whether p0117 = 6 has been set on the Control Unit.
- increase the fault threshold (p7789).
See also: p0117 (Current controller computing dead time mode)
A30010 (F)  Power unit: Sign-of-life error cyclic data
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLIQ communication error has occurred between the Control Unit and the power unit involved. The cyclic setpoint telegrams of the Control Unit were not received on time by the power unit for at least one clock cycle.
Remedy: Check the electrical cabinet design and cable routing for EMC compliance.
Reaction upon F: Infeed: NONE (OFF1, OFF2) Vector: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30011  Power unit: Line phase failure in main circuit
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2 (OFF1)
Acknowledge: IMMEDIATELY
Cause: At the power unit, the DC link voltage ripple has exceeded the permissible limit value. Possible causes:
- A line phase has failed.
- The 3 line phases are inadmissibly unsymmetrical.
- The fuse of a phase of a main circuit has ruptured.
- A motor phase has failed.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy: - check the main circuit fuses.
- Check whether a single-phase load is distorting the line voltages.
- check the motor feeder cables.

F30012  Power unit: Temperature sensor heat sink wire breakage
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The connection to a heat sink temperature sensor in the power unit is interrupted. Fault value (r0949, interpret hexadecimal):
Bit 0: Module slot (electronics slot)
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier 1
Bit 9: Rectifier 2
Remedy: Contact the manufacturer.

F30013  Power unit: Temperature sensor heat sink short-circuit
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: The heat sink temperature sensor in the power unit is short-circuited.
Fault value (r0949, interpret hexadecimal):
Bit 0: Module slot (electronics slot)
Bit 1: Air intake
Bit 2: Inverter 1
Bit 3: Inverter 2
Bit 4: Inverter 3
Bit 5: Inverter 4
Bit 6: Inverter 5
Bit 7: Inverter 6
Bit 8: Rectifier 1
Bit 9: Rectifier 2

Remedy: Contact the manufacturer.

F30015 (N, A) Power unit: Phase failure motor cable
Message value: -
Drive object: VECTOR_G
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A phase failure in the motor feeder cable was detected.
The signal can also be output in the following cases:
- The motor is correctly connected, but the drive has stalled in U/f control. In this case, a current of 0 A is possibly measured in one phase due to asymmetry of the currents.
- the motor is correctly connected, however the closed-speed control is instable and therefore an oscillating torque is generated.
Note: Chassis power units do not feature phase failure monitoring.
Remedy: - check the motor feeder cables.
- increase the ramp-up or ramp-down time (p1120) if the drive has stalled in U/f control.
- check the speed controller settings.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A30016 (N) Power unit: Load supply switched out
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The DC link voltage is too low.
Alarm value (r2124, interpret decimal):
DC link voltage at the time of trip [0.1 V].
Remedy: - switch on load supply.
- check the line supply if necessary.
Reaction upon N: NONE
Acknowl. upon N: NONE

F30017 Power unit: Hardware current limit has responded too often
Message value: Fault cause: %1 bin
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The hardware current limitation in the relevant phase (see A30031, A30032, A30033) has responded too often. The number of times the limit has been exceeded depends on the design and type of power unit.
For infeed units, the following applies:
- closed-loop control is incorrectly parameterized.
- load on the infeed is too high.
- Voltage Sensing Module incorrectly connected.
### List of faults and alarms

- line reactor missing or the incorrect type.
- power unit defective.

The following applies to Motor Modules:
- closed-loop control is incorrectly parameterized.
- fault in the motor or in the power cables.
- the power cables exceed the maximum permissible length.
- motor load too high
- power unit defective.

Fault value \( r0949 \), interpret binary:

<table>
<thead>
<tr>
<th>Bit 0: Phase U</th>
<th>Bit 1: Phase V</th>
<th>Bit 2: Phase W</th>
</tr>
</thead>
</table>

**Remedy:**

For infeed units, the following applies:
- check the controller settings and reset and identify the controller if necessary (\( p0340 = 2 \), \( p3410 = 5 \))
- reduce the load and increase the DC-link capacitance or use a higher-rating infeed if necessary
- check the connection of the optional Voltage Sensing Module
- check the connection and technical data of the line reactor
- check the power cables for short-circuit or ground fault.
- replace power unit.

The following applies to Motor Modules:
- check the motor data and if required, recalculate the controller parameters (\( p0340 = 3 \)). As an alternative, run a motor data identification (\( p1910 = 1 \), \( p1960 = 1 \)).
- check the motor circuit configuration (star-delta).
- check the motor load.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

---

**F30020 Power unit: Configuration not supported**

**Message value:** fault cause: %1, additional information: %2

**Drive object:** B_INF, VECTOR_G

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A configuration is requested that is not supported by the power unit.

Fault value \( r0949 \), interpret hexadecimal:

- \( \text{yyy} \text{xxxx} \) hex: \( \text{xxxx} \) = fault cause, \( \text{yyyy} \) = additional information (siemensintern)

- \( \text{xxx} = 0 \): Autonomous operation is requested but is not supported.
- \( \text{xxx} = 2 \): A PM260 has been detected with PS-ASIC version 2. This combination is not supported.
- \( \text{xxx} = 3 \): Initialization was not able to be successfully completed. It is possible that the Control Unit was withdrawn from the power module before or during power-up.
- \( \text{xxx} = 4 \): The combination of power unit and Control Unit or Control Unit Adapter is not supported.
- \( \text{xxx} = 5 \): The higher current controller dynamic performance is not supported.

**Remedy:**

- for fault cause = 0:
  - If required, deactivate an active internal voltage protection (\( p1231 \)).
- for fault cause = 1:
  - Update the Control Unit firmware or change the DRIVE-CLiQ topology.
- for fault cause = 2:
  - Replace the power unit with a PM260 with PS-ASIC version 3 (or higher).
- for fault cause = 3, 4:
  - Insert a Control Unit or Control Unit Adapter (CUAxx) on an appropriate Power Module and perform a POWER ON for the Control Unit or the Control Units Adapter.
- for fault cause = 5:
  - use a booksize format power unit.
  - for a Double Motor Module operate the two drive controls with the same current controller sampling time (\( p0115[0] \)). Otherwise, the higher current controller dynamics can only be activated on the drive with the longer sampling time.
  - If required, de-select the higher current controller dynamic performance (\( p1810.11 = 0 \)). After deselecting the computing dead time, recalculate the controller gains (\( p0340 = 4 \)). If required, optimize the speed controller.

See also: \( p0115 \), \( p1231 \), \( p1810 \)
F30021 Power unit: Ground fault
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Power unit has detected a ground fault.
- ground fault in the power cables.
- winding fault or ground fault at the motor.
- CT defective.
Additional cause for CU310/CUA31:
- when the brake is applied, this causes the hardware DC current monitoring to respond.
Additional cause for parallel switching devices (r0108.15 = 1):
- the closed-loop circulating current control is either too slow or has been set too fast.
Fault value (r0949, interpret decimal):
Absolute value, total current amplitude [20479 = r0209 x 1.4142].
Note:
For power units, a ground fault is also emulated in r3113.5.
Remedy:
- check the power cable connections.
- check the motor.
- check the CT.
The following applies additionally for CU310/CUA31:
- check the cables and contacts of the brake connection (a wire is possibly broken).
For parallel switching devices (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).
See also: p0287 (Ground fault monitoring thresholds)

F30022 Power unit: Monitoring U_ce
Message value: Fault cause: %1 bin
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: POWER ON
Cause: In the power unit, the monitoring of the collector-emitter voltage (U_ce) of the semiconductor has responded.
Possible causes:
- fiber-optic cable interrupted.
- power supply of the IGBT gating module missing.
- short-circuit at the power unit output.
- defective semiconductor in the power unit.
Fault value (r0949, interpret binary):
Bit 0: Short-circuit in phase U
Bit 1: Short circuit in phase V
Bit 2: Short-circuit in phase W
Bit 3: Light transmitter enable defective
Bit 4: U_ce group fault signal interrupted
See also: r0949 (Fault value)
Remedy:
- check the fiber-optic cable and if required, replace.
- check the power supply of the IGBT gating module (24 V).
- check the power cable connections.
- select the defective semiconductor and replace.

F30024 Power unit: Overtemperature thermal model
Message value: -
Drive object: B_INF
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
See also: r0037

**Remedy:**
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

**F30024** **Power unit: Overtemperature thermal model**

**Message value:** -

**Drive object:** VECTOR_G

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** The temperature difference between the heat sink and chip has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.
See also: r0037

**Remedy:**
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.
- if DC braking is active: reduce braking current (p1232).

**F30025** **Power unit: Chip overtemperature**

**Message value:** %1

**Drive object:** B_INF, VECTOR_G

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** The chip temperature of the semiconductor has exceeded the permissible limit value.
- the permissible load duty cycle was not maintained.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
- pulse frequency too high.

*Fault value (r0949, interpret decimal):*

Temperature difference between the heat sink and chip [0.01 °C].

**Remedy:**
- adapt the load duty cycle.
- check whether the fan is running.
- check the fan elements.
- check whether the ambient temperature is in the permissible range.
- check the motor load.
- reduce the pulse frequency if this is higher than the rated pulse frequency.

**Notice:**
This fault can only be acknowledged after this alarm threshold for alarm A05001 has been undershot.

See also: r0037
Faults and alarms

List of faults and alarms

F30027 Power unit: Precharging DC link time monitoring

Message value: Enable signals: %1, Status: %2
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause: The power unit DC link was not able to be pre-charged within the expected time.
1) There is no line supply voltage connected.
2) The line contactor/line side switch has not been closed.
3) The line supply voltage is too low.
4) Line supply voltage incorrectly set (p0210).
5) The pre-charging resistors are overheated as there were too many pre-charging operations per time unit.
6) The pre-charging resistors are overheated as the DC link capacitance is too high.
7) The pre-charging resistors are overheated because there is no "ready for operation" (r0863.0) of the infeed unit, power is taken from the DC link.
8) The pre-charging resistors are overheated as the line contactor was closed during the DC link fast discharge through the Braking Module.
9) The DC link has either a ground fault or a short-circuit.
10) The pre-charging circuit is possibly defective (only for chassis units).
11) Infeed is defective and/or fuse has ruptured in the Motor Module (only Booksise units).

Fault value (r0949, interpret binary):
yyyyyyyy hex:
yyyy = power unit state
0: Fault status (wait for OFF and fault acknowledgement).
1: Restart inhibit (wait for OFF).
2: Overvoltage condition detected -> change into the fault state.
3: Undervoltage condition detected -> change into the fault state.
4: Wait for bridging contactor to open -> change into the fault state.
5: Wait for bridging contactor to open -> change into restart inhibit.
6: Commissioning.
7: Ready for pre-charging.
8: Pre-charging started, DC link voltage less than the minimum switch-on voltage.
9: Pre-charging, DC link voltage end of pre-charging still not detected.
10: Wait for the end of the de-bounce time of the main contactor after pre-charging has been completed.
11: Pre-charging completed, ready for pulse enable.
12: It was detected that the STO terminal was energized at the power unit.
xxxx = Missing internal enable signals, power unit (inverted bit-coded, FFFF hex -> all internal enable signals available)
Bit 0: Power supply of the IGBT gating shut down.
Bit 1: Ground fault detected.
Bit 2: Peak current intervention.
Bit 3: I2t exceeded.
Bit 4: Thermal model overtemperature calculated.
Bit 5: (heat sink, gating module, power unit) overtemperature measured.
Bit 6: Reserved.
Bit 7: Overvoltage detected.
Bit 8: Power unit has completed pre-charging, ready for pulse enable.
Bit 9: STO terminal missing.
Bit 10: Overcurrent detected.
Bit 11: Armature short-circuit active.
Bit 12: DRIVE-CLIQ fault active.
Bit 13: Vce fault detected, transistor de-saturated due to overcurrent/short-circuit.
Bit 14: Undervoltage detected.

Remedy: In general:
- check the line supply voltage at the input terminals.
- check the line supply voltage setting (p0210).
For booksise drive units, the following applies:
- wait (approx. 8 minutes) until the pre-charging resistors have cooled down. For this purpose, preferably disconnect the infeed unit from the line supply.
Re 5):
- carefully observe the permissible pre-charging frequency (refer to the appropriate Equipment Manual).
Re 6):
- check the total capacitance of the DC link and reduce in accordance with the maximum permissible DC-link capacitance if necessary (refer to the appropriate Equipment Manual)
Re 7):
- interconnect the ready-for-operation signal from the infeed unit (r0863.0) in the enable logic of the drives connected to this DC link
Re 8):
- check the connections of the external line contactor. The line contactor must be open during DC-link fast discharge.
Re 9):
- check the DC link for ground faults or short circuits.
Re 11):
- Check the DC link voltage of the infeed (r0070) and Motor Modules (r0070).
If the DC link voltage generated by the infeed (or external) is not displayed for the Motor Modules (r0070), then a fuse has ruptured in the Motor Module.
See also: p0210 (Drive unit line supply voltage)

### A30031 Power unit: Hardware current limiting, phase U

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Hardware current limit for phase U responded. The pulsing in this phase is inhibited for one pulse period.  
- closed-loop control is incorrectly parameterized.  
- fault in the motor or in the power cables.  
- the power cables exceed the maximum permissible length.  
- motor load too high  
- power unit defective.  
**Note:** Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.  
**Remedy:**  
- check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).  
- check the motor circuit configuration (star/delta).  
- check the motor load.  
- check the power cable connections.  
- check the power cables for short-circuit or ground fault.  
- check the length of the power cables.

### A30032 Power unit: Hardware current limiting, phase V

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Hardware current limit for phase V responded. The pulsing in this phase is inhibited for one pulse period.  
- closed-loop control is incorrectly parameterized.  
- fault in the motor or in the power cables.  
- the power cables exceed the maximum permissible length.  
- motor load too high  
- power unit defective.  
**Note:** Alarm A30031 is always output if, for a Power Module, the hardware current limiting of phase U, V or W responds.  
**Remedy:**  
Check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1).  
- check the motor circuit configuration (star/delta).  
- check the motor load.  
- check the power cable connections.  
- check the power cables for short-circuit or ground fault.  
- check the length of the power cables.
## Faults and alarms

### List of faults and alarms

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<th>Message Value</th>
<th>Drive object</th>
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<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A30033</td>
<td>Power unit: Hardware current limiting, phase W</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>Hardware current limit for phase W responded. The pulsing in this phase is inhibited for one pulse period.</td>
<td>- check the motor data and if required, recalculate the control parameters (p0340 = 3). As an alternative, run a motor data identification (p1910 = 1, p1960 = 1). - check the power cable connections. - check the power cables for short-circuit or ground fault. - check the length of the power cables.</td>
</tr>
<tr>
<td>A30034</td>
<td>Power unit: Internal overtemperature</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The alarm threshold for internal overtemperature has been reached. If the temperature inside the unit continues to increase, fault F30036 may be triggered.</td>
<td>- check the ambient temperature. - check the fan for the inside of the unit.</td>
</tr>
<tr>
<td>F30035</td>
<td>Power unit: Air intake overtemperature</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The air intake in the power unit has exceeded the permissible temperature limit. For air-cooled power units, the temperature limit is at 55 °C.</td>
<td>- check whether the fan is running. - check the fan elements.</td>
</tr>
</tbody>
</table>

**Notice:**
This fault can only be acknowledged after this alarm threshold for alarm A05002 has been undershot.
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
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<th>Cause</th>
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<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30036</td>
<td>Power unit: Internal overtemperature</td>
<td>%1</td>
<td>All objects</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature inside the drive converter has exceeded the permissible temperature limit. - insufficient cooling, fan failure. - overload. - ambient temperature too high. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range.</td>
<td>This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.</td>
</tr>
<tr>
<td>F30037</td>
<td>Power unit: Rectifier overtemperature</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature in the rectifier of the power unit has exceeded the permissible temperature limit. - insufficient cooling, fan failure. - overload. - ambient temperature too high. - line supply phase failure. Fault value (r0949, interpret decimal): Temperature [0.01 °C].</td>
<td>- check whether the fan is running. - check the fan elements. - check whether the ambient temperature is in the permissible range. - check the motor load. - check the line supply phases.</td>
<td>This fault can only be acknowledged after this alarm threshold for alarm A05004 has been undershot.</td>
</tr>
<tr>
<td>A30038</td>
<td>Power unit: Capacitor fan monitoring</td>
<td>%1</td>
<td>B_INF</td>
<td>NONE</td>
<td>NONE</td>
<td>The capacitor fan signals a fault.</td>
<td>Replace the capacitor fan in the power unit.</td>
<td></td>
</tr>
<tr>
<td>F30039</td>
<td>Power unit: Failure capacitor fan</td>
<td>%1</td>
<td>B_INF</td>
<td>OFF1</td>
<td>IMMEDIATELY</td>
<td>The capacitor fan has failed.</td>
<td>Replace the capacitor fan in the power unit.</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

**F30040 Power unit: Undervolt 24 V**

Message value: %1

Drive object: B_INF, VECTOR_G

Reaction: OFF2

Acknowledge: IMMEDIATELY (POWER ON)

Cause: Failure of the 24 V power supply for the power unit.
- The undervoltage threshold was undershot for longer than 3 ms.
- Fault value (r0949, interpret decimal): 24 V voltage [0.1 V].

Remedy: - Check the power supply of the power unit.
- carry out a POWER ON (power off/on) for the component.

**A30041 (F) Power unit: Undervoltage 24 V alarm**

Message value: %1

Drive object: B_INF

Reaction: NONE

Acknowledge: NONE

Cause: For the power unit power supply, the lower threshold has been violated.
- Alarm value (r2124, interpret hexadecimal): Only for internal Siemens troubleshooting.

Remedy: - Check the power supply of the power unit.
- carry out a POWER ON (power off/on) for the component.

**A30041 (F) Power unit: Undervoltage 24 V alarm**

Message value: %1

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: For the power unit power supply, the lower threshold has been violated.
- Alarm value (r2124, interpret decimal): 24 V voltage [0.1 V].

Remedy: - Check the power supply of the power unit.
- carry out a POWER ON (power off/on) for the component.

**A30042 Power unit: Fan operating time reached or exceeded**

Message value: %1

Drive object: B_INF, VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: The maximum operating time of the fan in the power unit is set in p0252.
This message indicates the following:
- Fault value (r0949, interpret decimal):
  - 0: The maximum fan operating time is 500 hours.
  - 1: The maximum fan operating time has been exceeded.

Remedy: Replace the fan in the power unit and reset the operating hours counter to 0 (p0251 = 0).
See also: p0251 (Operating hours counter power unit fan), p0252 (Maximum operating time power unit fan)
### List of faults and alarms

#### F30043  Power unit: Overvolt 24 V
- **Message value:** %1
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** POWER ON
- **Cause:** For the power unit power supply, the upper threshold has been violated. Fault value (r0949, interpret decimal):
  - 24 V voltage [0.1 V].
- **Remedy:** Check the power supply of the power unit.

#### A30044 (F)  Power unit: Overvoltage 24 V alarm
- **Message value:** %1
- **Drive object:** B_INF
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** For the power unit power supply, the upper threshold has been violated. Alarm value (r2124, interpret decimal):
  - 24 V voltage [0.1 V].
- **Remedy:** Check the power supply of the power unit.
- **Reaction upon F:**
  - Infeed: NONE (OFF1, OFF2)
  - Vector: NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY (POWER ON)

#### A30044 (F)  Power unit: Overvoltage 24 V alarm
- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** For the power unit power supply, the upper threshold has been violated. Alarm value (r2124, interpret decimal):
  - 24 V voltage [0.1 V].
- **Remedy:** Check the power supply of the power unit.
- **Reaction upon F:**
  - Infeed: NONE (OFF1, OFF2)
  - Vector: NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY (POWER ON)

#### F30045  Power unit: Supply undervoltage
- **Message value:** %1
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** Power supply fault in the power unit.
  - The voltage monitor signals an undervoltage fault on the module.
  - The following applies for CU31x:
    - the voltage monitoring on the DAC board signals an undervoltage fault on the module.
- **Remedy:**
  - Check the power supply of the power unit.
  - carry out a POWER ON (power off/on) for the component.
  - replace the module if necessary.
### A30046 (F) Power unit: Undervoltage, alarm

**Message value:** %1  
**Drive object:** B_INF  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Before the last restart, a problem occurred at the power unit power supply.  
- the voltage monitor in the internal FPGA of the PSA signals an undervoltage fault on the module.  
**Remedy:**  
- check the 24 V DC voltage supply to power unit.  
- carry out a POWER ON (power off/on) for the component.  
- replace the module if necessary.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (OFF1, OFF2, OFF3)  
**Ackow. upon F:** IMMEDIATELY (POWER ON)

### A30046 (F) Power unit: Undervoltage, alarm

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Before the last restart, a problem occurred at the power unit power supply.  
- the voltage monitor in the internal FPGA of the PSA signals an undervoltage fault on the module.  
**Remedy:**  
- check the 24 V DC voltage supply to power unit.  
- carry out a POWER ON (power off/on) for the component.  
- replace the module if necessary.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (OFF1, OFF2, OFF3)  
**Ackow. upon F:** IMMEDIATELY (POWER ON)

### F30047 Cooling unit: Cooling medium flow rate too low

**Message value:** %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The flowrate of the cooling unit has fallen below the fault threshold.  
**Remedy:**  
- Check the feedback signals and parameter assignment (p0260 ... p0267).  
- Check the coolant feed.

### A30048 Power unit: External fan faulty

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The feedback signal from the external fan indicates a fault.  
- fan faulty, blocked.  
- feedback signal inaccurate.  
**Remedy:**  
- check the external fan and replace if necessary.  
- if you are using an external fan with feedback, check its wiring (X12.2 or X13.2).  
**Note:**  
If you are using an external fan without feedback, check that the feedback terminal wiring on the power unit is connected to ground and make this connection if necessary (X12.1/2 or X13.1/2).
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A30049</td>
<td>Power unit: Internal fan faulty</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The internal fan has failed.</td>
<td>Check the internal fan and replace if necessary.</td>
</tr>
<tr>
<td>F30050</td>
<td>Power unit: 24 V supply overvoltage</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>POWER ON</td>
<td>The voltage monitor signals an overvoltage fault on the module.</td>
<td>- check the 24 V power supply.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- replace the module if necessary.</td>
</tr>
<tr>
<td>F30052</td>
<td>EEPROM data error</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>POWER ON</td>
<td>EEPROM data error of the power unit module.</td>
<td>Replace the power unit module or update the EEPROM data.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
<td>For fault value = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0, 2, 3, 4:</td>
<td>The following applies for CU31x and CUA31:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The EEPROM data read in from the power unit module are incorrect.</td>
<td>Update the firmware \SIEMENS\SINAMICS\CODE\SAC\cu31xi.ufw (cua31.ufw)</td>
</tr>
<tr>
<td>F30053</td>
<td>FPGA data faulty</td>
<td>%1</td>
<td>Any objects</td>
<td>NONE</td>
<td>POWER ON</td>
<td>The FPGA data of the power unit are faulty.</td>
<td>Replace the power unit or update the FPGA data.</td>
</tr>
<tr>
<td>A30054 (F)</td>
<td>Power unit: Undervoltage when opening the brake</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>When the brake is being opened, it is detected that the power supply voltage is less than 24 V - 10% = 21.6V.</td>
<td>Check the 24 V voltage for stability and value.</td>
</tr>
</tbody>
</table>

Example:
- Alarm value = 195 --> voltage = 19.5 V
### Faults and alarms

#### List of faults and alarms

<table>
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<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30055</td>
<td>Power unit: Braking chopper overcurrent</td>
<td></td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>An overcurrent condition has occurred in the braking chopper.</td>
<td>- check whether the braking resistor has a short circuit.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- for an external braking resistor, check whether the resistor may have been dimensioned too small.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Note:</td>
<td>The braking chopper is only enabled again at pulse enable after the fault has been acknowledged.</td>
</tr>
<tr>
<td>A30057</td>
<td>Power unit: Line asymmetry</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>Frequencies have been detected on the DC link voltage that would suggest line asymmetry or failure of a line phase. It is also possible that a motor phase has failed. Fault F30011 is output if the alarm is present and at the latest after 5 minutes. The precise duration depends on the power unit type and the particular frequencies. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- check the line phase connection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- check the motor feeder cable connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>If there is no phase failure of the line or motor, then line asymmetry is involved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- reduce the power in order to avoid fault F30011.</td>
</tr>
<tr>
<td>F30059</td>
<td>Power unit: Internal fan faulty</td>
<td></td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The internal power unit fan has failed and is possibly defective.</td>
<td>Check the internal fan and replace if necessary.</td>
</tr>
<tr>
<td>F30060</td>
<td>Pre-charge contactor state monitoring</td>
<td>Fault cause:</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>A feedback signal for the pre-charging contactor (ALM, SLM, BLM diode) or the line contactor (BLM thyristor) inter-connected and the monitoring activated. After switching-in/switching-out the contactor, a correct feedback signal was not received within the monitoring time set in p0255[0]. Fault value (r0949, interpret binary): Bit 0: The time set in p0255[0] was exceeded when switching-in/switching-out the contactor. Bit 1: The pre-charging contactor was opened while pre-charging or in the infeed mode (BLM thyristor). Bit 2: The pre-charging contactor was switched-in in the OFF state or during infeed operation.</td>
<td>- check the monitoring time setting (p0255[0]).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%1 bin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- check the contactor wiring and activation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- replace the contactor.</td>
</tr>
<tr>
<td>Reaction upon A:</td>
<td>NONE</td>
<td>Acknowl. upon A:</td>
<td>NONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Fault F30061 (A) Bridging contactor monitoring

**Message value:** Fault cause: %1 bin  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2 (NONE, OFF1)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** A feedback signal for the bypass contactor is interconnected and the monitoring activated. After switching-in/switching-out the contactor, a correct feedback signal was not received within the monitoring time set in p0255[1].  
Fault value (r0949, interpret binary):  
- Bit 0: The time set in p0255[1] was exceeded when switching-in/switching-out the contactor.  
- Bit 1: The bypass contactor was opened in operation.  
- Bit 2: The bypass contactor was switched-in in the OFF state or during pre-charging.  
**Remedy:**  
- Check the monitoring time setting (p0255[1]).  
- Check the contactor wiring and activation.  
- Replace the contactor.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### Fault F30070 Cycle requested by the power unit module not supported

**Message value:** %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A cycle is requested that is not supported by the power unit.  
Fault value (r0949, interpret hexadecimal):  
- 0: The current control cycle is not supported.  
- 1: The DRIVE-CLiQ cycle is not supported.  
- 2: Internal timing problem (clearance between RX and TX instants too low).  
- 3: Internal timing problem (TX instant too early).  
**Remedy:** The power unit only supports the following cycles:  
- 62.5 µs, 125 µs, 250 µs and 500 µs  
For fault value = 0:  
- Set a permitted current control cycle.  
For fault value = 1:  
- Set a permitted DRIVE-CLiQ cycle.  
Re fault value = 2, 3:  
- Contact the manufacturer (you may have an incompatible firmware version).

### Fault F30071 No new actual values received from the power unit module

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The number of actual value telegrams from the power unit module that have failed has exceeded the permissible number.  
**Remedy:** Check the interface (adjustment and locking) to the power unit module.

### Fault F30072 Setpoints are no longer being transferred to the power unit

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The following applies for CU31x and CUA31:  
More than one setpoint telegram was not able to be transferred to the power unit module.  
**Remedy:** The following applies for CU31x and CUA31:  
- Check the interface (adjustment and locking) to the power unit module.
### A30073 (N) Actual value/setpoint preprocessing no longer synchronous

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>Communication with the power unit module is no longer in synchronism with the current control cycle.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Wait until synchronization is re-established.</td>
</tr>
</tbody>
</table>

### F30074 (A) Communication error between the Control Unit and Power Module

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>Communications between the Control Unit (CU) and Power Module (PM) via the interface no longer possible. The CU may have been withdrawn or is incorrectly inserted. Fault value (r0949, interpret hexadecimal): 0 hex: The Control Unit was withdrawn from the Power Module during operation. 1 hex: The Control Unit was withdrawn from the Power Module during operation, although the encoderless safe motion monitoring functions are enabled. This is not supported. After re-inserting the Control Unit in operation, communications to the Power Module no longer possible. 20A hex: The Control Unit was inserted on a Power Module, which has another code number. 20B hex: The Control Unit was inserted on a Power Module, which although it has the same code number, has a different serial number. 601 hex: The Control Unit was inserted on a Power Module, whose power/performance class (chassis unit) is not supported.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Reinsert the Control Unit (CU) or the Control Unit adapter (CUAxx) onto the original Power Module and continue operation. If required, carry out a POWER ON for the CU and/or the CUA.</td>
</tr>
</tbody>
</table>

### F30080 Power unit: Current increasing too quickly

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>The power unit has detected an excessive rate of rise in the overvoltage range. - closed-loop control is incorrectly parameterized. - motor has a short-circuit or fault to ground (frame). - U/f operation: Up ramp set too low. - U/f operation: rated current of motor much greater than that of power unit. - infeed: High discharge and post-charging currents for voltage dip. - infeed: High post-charging currents for overload when motoring and DC link voltage dip. - infeed: Short-circuit currents at power-up due to the missing line reactor. - power cables are not correctly connected. - power cables exceed the maximum permissible length. - power unit defective. Additional causes for a parallel switching device (r0108.15 = 1): - a power unit has tripped (powered down) due to a ground fault. - the closed-loop circulating current control is either too slow or has been set too fast.</td>
</tr>
<tr>
<td>Reaction upon A:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon A:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

Remedy:
- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star-delta)
- U/f operation: Increase up ramp.
- U/f operation: Check assignment of rated currents of motor and power unit.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Correct connection of the line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).

F30081 Power unit: Switching operations too frequent

Message value: Fault cause: %1 bin
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
The power unit has executed too many switching operations for current limitation.
- closed-loop control is incorrectly parameterized.
- motor has a short-circuit or fault to ground (frame).
- U/f operation: rated current of motor much greater than that of power unit.
- infeed: High discharge and post-charging currents for voltage dip.
- infeed: High post-charging currents for overload when motoring and DC link voltage dip.
- infeed: Short-circuit currents at power-up due to the missing line reactor.
- power cables are not correctly connected.
- power cables exceed the maximum permissible length.
- power unit defective.

Additional causes for a parallel switching device (r0108.15 = 1):
- a power unit has tripped (powered down) due to a ground fault.
- the closed-loop circulating current control is either too slow or has been set too fast.

Fault value (r0949, interpret bitwise binary):
Bit 0: Phase U.
Bit 1: Phase V.
Bit 2: Phase W.

Remedy:
- check the motor data - if required, carry out commissioning.
- check the motor circuit configuration (star-delta)
- U/f operation: Increase up ramp.
- U/f operation: Check assignment of rated currents of motor and power unit.
- infeed: Check the line supply quality.
- infeed: Reduce the motor load.
- infeed: Correct connection of the line reactor.
- check the power cable connections.
- check the power cables for short-circuit or ground fault.
- check the length of the power cables.
- replace power unit.

For a parallel switching device (r0108.15 = 1) the following additionally applies:
- check the ground fault monitoring thresholds (p0287).
- check the setting of the closed-loop circulating current control (p7036, p7037).
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30105</td>
<td>PU: Actual value sensing fault</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>At least one incorrect actual value channel was detected on the Power Stack Adapter (PSA). The incorrect actual value channels are displayed in the following diagnostic parameters.</td>
<td>Evaluate the diagnostic parameters. If the actual value channel is incorrect, check the components and if required, replace.</td>
</tr>
<tr>
<td>F30314</td>
<td>Power unit: 24 V power supply overloaded by PM</td>
<td>-</td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The 24 V power supply through the Power Module (PM) is overloaded. An external 24 V power supply via X124 on the Control Unit is not connected.</td>
<td>Connect an external 24 V power supply via X124 at the Control Unit.</td>
</tr>
<tr>
<td>A30315 (F)</td>
<td>Power unit: 24 V power supply overloaded by PM</td>
<td>-</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The 24 V power supply through the Power Module (PM) is overloaded. An external 24 V power supply via X124 on the Control Unit is not connected.</td>
<td>Connect an external 24 V power supply via X124 at the Control Unit.</td>
</tr>
<tr>
<td>A30502</td>
<td>Power unit: DC link overvoltage</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The power unit has detected overvoltage in the DC link on a pulse inhibit. - device connection voltage too high. - line reactor incorrectly dimensioned. Alarm value (r0949, interpret decimal): DC link voltage [1 bit = 100 mV]. See also: r0070 (Actual DC link voltage)</td>
<td>- check the device supply voltage (p0210). - check the dimensioning of the line reactor. See also: p0210 (Drive unit line supply voltage)</td>
</tr>
<tr>
<td>F30600</td>
<td>SI MM: STOP A initiated</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The &quot;Safety Integrated&quot; function integrated in the drive in the Motor Module (MM) has detected a fault and initiated STOP A (pulse suppression via the safety shutdown path of the Motor Module). - forced checking procedure of the safety shutdown path of the Motor Module unsuccessful. - subsequent response to fault F30611 (defect in a monitoring channel).</td>
<td></td>
</tr>
</tbody>
</table>
Fault value (r0949, interpret decimal):
0: Stop request from the Control Unit.
1005: Pulses suppressed although STO not selected and there is no internal STOP A present.
1010: Pulses enabled although STO is selected or an internal STOP A is present.
1020: Internal software error in the "Internal voltage protection" function. The "internal voltage protection" function is withdrawn. A STOP A that cannot be acknowledged is initiated.
9999: Subsequent response to fault F30611.

Remedy:
- select Safe Torque Off and de-select again.
- replace the Motor Module involved.
For fault value = 1020:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- replace the Motor Module.
For fault value = 9999:
- carry out diagnostics for fault F30611.

Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated
STO: Safe Torque Off / SH: Safe standstill

F30611 SI MM: Defect in a monitoring channel
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The "Safety Integrated" function integrated in the drive in the Motor Module (MM) has detected a fault in the cross-wise data comparison between the Control Unit (CU) and MM and initiated a STOP F.
As a result of this fault, after the parameterized transition has expired (p9858), fault F30600 is output (SI MM: STOP A initiated).

Fault value (r0949, interpret decimal):
0: Stop request from the Control Unit.
1 ... 999:
Number of the cross-compared data that resulted in this fault. This number is also displayed in r9895.
1: SI monitoring clock cycle (r9780, r9880).
2: SI enable safety functions (p9601, p9801). Crosswise data comparison is only carried out for the supported bits.
3: SI SGE changeover tolerance time (p9650, p9850).
4: SI transition period STOP F to STOP A (p9658, p9858).
5: SI enable Safe Brake Control (p9602, p9802).
6: SI Motion enable, safety-relevant functions (p9501, internal value).
7: SI pulse suppression delay time for Safe Stop 1 (p9652, p9852).
8: SI PROFIsafe address (p9610, p9810).
9: SI debounce time for STO/SBC/SS1 (MM) (p9651, p9851).
10: SI delay time for pulse suppression for ESR (p9697, p9897).
11: SI Safe Brake Adapter mode, BICO interconnection (p9621, p9821).
12: SI Safe Brake Adapter relay ON time (p9622[0], p9822[0]).
13: SI Safe Brake Adapter relay OFF time (p9622[1], p9822[1]).
14: SI PROFIsafe telegram selection (p9611, p9811).
1000: Watchdog timer has expired.

Within the time of approx. 5 x p9650, alternatively, the following was defined:
- Too many switching operations have occurred at the EP terminal of the Motor Module.
- Via PROFIsafe/TM54F, STO was too frequently initiated (also as subsequent response).
- Safe pulse cancellation (r9723.9) was too frequently initiated (also as subsequent response).
1001, 1002: Initialization error, change timer / check timer.
1950: Module temperature outside the permissible temperature range.
1951: Module temperature not plausibile.
2000: Status of the STO selection on the Control Unit and Motor Module are different.
2001: Feedback signal for safe pulse suppression on the Control Unit and Motor Module are different.
2002: Status of the delay timer SS1 on the Control Unit and Motor Module are different (status of the timer in p9650/p9850).
Faults and alarms

List of faults and alarms

6000 ... 6999:
Error in the PROFIsafe control.
For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
The significance of the individual message values is described in safety message C01711.

Remedy:

- check the cross data comparison that resulted in a STOP F.
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 6:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

For fault value = 1000:
- check the wiring of the safety-relevant inputs (SGE) on the Control Unit (contact problems).
- PROFIsafe: Remove contact problems/faults at the PROFINET controller.
- check the wiring of the failsafe inputs at the TM54F (contact problems).

Re fault value = 1001, 1002:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

Re fault value = 2000, 2001, 2002:
- check the tolerance time SGE changeover and if required, increase the value (p9650/p9850, p9652/p9852).
- check the wiring of the safety-relevant inputs (SGE) (contact problems).
- check the cause of the STO selection in r9772. When the SMM functions are active (p9501 = 1), STO can also be selected using these functions.
- replace the Motor Module involved.

Re fault value = 6000 ... 6999:
Refer to the description of the message values in safety message C01711.

Note:
CU: Control Unit
EP: Enable Pulses (pulse enable)
ESR: Extended Stop and Retract
MM: Motor Module
SGE: Safety-relevant input
SI: Safety Integrated
SMM: Safe Motion Monitoring
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill

N30620 (F, A) SI MM: Safe Torque Off active
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The function "Safe Torque Off" (STO) of the basic functions was selected on the Motor Module (MM) via the input terminal and is active.
Note:
- This message does not result in a safety stop response.
- This message is not output when STO is selected using the Extended Functions.
Remedy: Not necessary.
Note:
MM: Motor Module
SI: Safety Integrated
SMM: Safe Motion Monitoring
STO: Safe Torque Off / SH: Safe standstill

Reaction upon F: OFF2
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon A: NONE
Acknowl. upon A: NONE
N30621 (F, A)  SI MM: Safe Stop 1 active

Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The "Safe Stop 1" function (SS1) was selected on the Motor Module (MM) and is active.
Note: This message does not result in a safety stop response.
Remedy: Not necessary.
Note:
MM: Motor Module
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)

Reaction upon F: Infeed: OFF2
Vector: NONE (OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon A: NONE
Acknowl. upon A: NONE

F30625  SI MM: Sign-of-life error in safety data

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The "Safety Integrated" function integrated in the drive on the Motor Module (MM) has detected an error in the sign-of-life of the safety data between the Control Unit (CU) and MM and initiated a STOP A.
- there is either a DRIVE-CLiQ communication error or communication has failed.
- a time slice overflow of the safety software has occurred.
- The enable of the safety functions in both monitoring channels is inconsistent (p9601 = 0, p9801 <> 0).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- select Safe Torque Off and de-select again.
- carry out a POWER ON (power off/on) for all components.
- check whether there is a DRIVE-CLiQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- de-select all drive functions that are not absolutely necessary.
- reduce the number of drives.
- check the electrical cabinet design and cable routing for EMC compliance
- Check the enable of the safety functions for both of the monitoring channels and if required, correct (p9601, p9801).
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated

F30630  SI MM: Brake control error

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The "Safety Integrated" function integrated in the drive on the Motor Module (MM) has detected a brake control error and initiated a STOP A.
Fault value (r0949, interpret decimal):
10:
Fault in "open holding brake" operation.
- Parameter p1278 incorrectly set.
- No brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
- Ground fault in brake cable.
Faults and alarms

List of faults and alarms

30:
Fault in "close holding brake" operation.
- No brake connected or wire breakage (check whether brake releases for p1278 = 1 and p9602/p9802 = 0 (SBC deactivated)).
- Short-circuit in brake winding.

40:
Fault in "brake closed" state.

60, 70:
Fault in the brake control circuit of the Control Unit or communication fault between the Control Unit and Motor Module (brake control).

81: Safe Brake Adapter: Fault in "brake closed" state.
82: Safe Brake Adapter: Fault in "open brake" state.
83: Safe Brake Adapter: Fault in "close brake" state.
84,85:
Safe Brake Adapter: Fault in the brake control circuit of the Control Unit or communication fault between Control Unit and Motor Module (brake control).

Note:
The following causes may apply to fault values:
- motor cable is not shielded correctly.
- defed in control circuit of the Motor Module.
- check parameter p1278 (for SBC, only p1278 = 0 is permissible).
- select Safe Torque Off and de-select again.
- check the motor holding brake connection.
- check the function of the motor holding brake.
- check whether there is a DRIVE-CLIQ communication error between the Control Unit and the Motor Module involved and, if required, carry out a diagnostics routine for the faults identified.
- check that the electrical cabinet design and cable routing are in compliance with EMC regulations (e.g. shield of the motor cable and brake conductors are connected with the shield connecting plate and the motor connectors are tightly screwed to the housing).
- replace the Motor Module involved.

Remedy:
Operation with Safe Brake Module or Safe Brake Adapter:
- check the Safe Brake Module or Safe Brake Adapter connection.
- Replace the Safe Brake Module or Safe Brake Adapter.

Note:
MM: Motor Module
SBC: Safe Brake Control
SI: Safety Integrated

F30631  Brake control: external release active
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For service purposes, the brake is supplied with voltage at terminal X4.1.
Remedy: Remove the power supply at terminal X4.1.

A30640 (F)  SI MM: Fault in the shutdown path of the second channel
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The Motor Module has detected a communication error with the higher-level control or the TM54F to transfer the safety-relevant information or there is a communication error between Motor Modules connected in parallel.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
For the higher-level control, the following applies:
- check the PROFIsafe address in the higher-level control and Motor Modules and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
For TM54F, carry out the following steps:
- start the copy function for the node identifier (p9700 = 1D hex).
- acknowledge hardware CRC (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.

For a parallel connection, the following applies:
- check the PROFIsafe address in the Control Unit and Motor Module and if required, align.
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.

The following generally applies:
- upgrade the Motor Module software.

Note:
MM: Motor Module
SI: Safety Integrated
See also: p9810 (SI PROFIsafe address (Motor Module))

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30649</td>
<td>SI MM: Internal software error</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>An internal error in the Safety Integrated software on the Motor Module has occurred. Note: This fault results in a STOP A that cannot be acknowledged. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.</td>
</tr>
<tr>
<td>F30650</td>
<td>SI MM: Acceptance test required</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The &quot;Safety Integrated&quot; function on the Motor Module requires an acceptance test. Note: This fault results in a STOP A that can be acknowledged. Fault value (r0949, interpret decimal): 130: Safety parameters for the Motor Module not available. Note: This fault value is always output when Safety Integrated is commissioned for the first time. 1000: Reference and actual checksum in the Motor Module are not identical (booting). - as a result of the changed current controller sampling time (p0115[0]), the clock cycle time for the Safety Integrated Basic Functions (r9880) was adapted. - at least one checksum-checked piece of data is defective. - Safety parameters set offline and loaded into the Control Unit. 2000: Reference and actual checksum on the Motor Module are not identical (commissioning mode). - reference checksum incorrectly entered into the Motor Module (p9899 not equal to r9898). 2003: Acceptance test is required as a safety parameter has been changed. 3003: Acceptance test is required as a hardware-related safety parameter has been changed. 9999: Subsequent response of another safety-related fault that occurred when booting that requires an acceptance test.</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Remedy:

For fault value = 130:
- carry out safety commissioning routine.

For fault value = 1000:
- check the Safety Integrated Basic Functions (r9880) and adapt the reference checksum (p9899).
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).

For fault value = 2000:
- check the safety parameters in the Motor Module and adapt the reference checksum (p9899).
- again carry out safety commissioning routine.
- replace the memory card or Control Unit.
- Using STARTER, activate the safety parameters for the drive involved (change settings, copy parameters, activate settings).

For fault value = 2003, 2005:
- check the safety parameters in the Motor Module and adapt the reference checksum (p9899).

For fault value = 2003:
- carry out the function checks for the modified hardware and generate an acceptance report.

The procedure when carrying out an acceptance test as well as an example of the acceptance report are provided in the following literature:
SINAMICS S120 Function Manual Safety Integrated

For fault value = 9999:
- carry out diagnostics for the other safety-related fault that is present.

Note:
MM: Motor Module
SI: Safety Integrated
See also: p9799 (SI reference checksum SI parameters (Control Unit)), p9899 (SI reference checksum SI parameters (Motor Module))

F30651 SI MM: Synchronization with Control Unit unsuccessful

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The "Safety Integrated" function integrated in the drive is requesting synchronization of the safety time slices on the Control Unit and Motor Module. This synchronization routine was unsuccessful.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

Note:
MM: Motor Module
SI: Safety Integrated

F30652 SI MM: Illegal monitoring clock cycle

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The Safety Integrated monitoring clock cycle cannot be maintained due to the communication conditions requested in the system.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- if fault F01652 simultaneously occurs, apply the remedy/countermeasure described there.
- Upgrade the firmware of the Motor Module to a later version.
List of faults and alarms

Note:
MM: Motor Module
SI: Safety Integrated

F30655  SI MM: Align monitoring functions
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: IMMEDIATELY (POWER ON)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An error has occurred when aligning the Safety Integrated monitoring functions on the Control Unit (CU) and Motor Module (MM). Control Unit and Motor Module were not able to determine a common set of supported SI monitoring functions.
- there is either a DRIVE-CLiQ communication error or communication has failed.
- Safety Integrated software releases on the Control Unit and Motor Module are not compatible with one another.
Note:
This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on) for all components.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
- check the electrical cabinet design and cable routing for EMC compliance
Note:
CU: Control Unit
MM: Motor Module
SI: Safety Integrated

F30656  SI MM: Motor Module parameter error
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: When accessing the Safety Integrated parameters for the Motor Module (MM) in the non-volatile memory, an error has occurred.
Note:
This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
129: safety parameters for the Motor Module corrupted.
- drive with enabled safety functions was possibly copied offline using the commissioning software and the project downloaded.
131: Internal software error on the Control Unit.
255: Internal Motor Module software error.
Remedy:
- re-commission the safety functions.
- upgrade the Control Unit software.
- upgrade the Motor Module software.
- replace the memory card or Control Unit.
For fault value = 129:
- activate the safety commissioning mode (p0010 = 95).
- adapt the PROFIsafe address (p9610).
- start the copy function for SI parameters (p9700 = D0 hex).
- acknowledge data change (p9701 = DC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0977 = 1 or "copy RAM to ROM").
- carry out a POWER ON (power off/on) for all components.
Note:
MM: Motor Module
SI: Safety Integrated
### F30657 SI CU: PROFIsafe telegram number invalid

**Message value:**
- 

**Drive object:**
VECTOR_G

**Reaction:**
OFF2

**Acknowledge:**
POWER ON

**Cause:**
The PROFIsafe telegram number set in p9811 is not valid.
When PROFIsafe is enabled (p9801.3 = 1), then a telegram number greater than zero must be entered in p9811.
Note:
This fault does not result in a safety stop response.
See also: p9611 (SI PROFIsafe telegram selection (Control Unit)), p60022 (PROFIsafe telegram selection)

**Remedy:**
Check the telegram number setting (p9811).

### F30659 SI MM: Write request for parameter rejected

**Message value:**
%1

**Drive object:**
B_INF, VECTOR_G

**Reaction:**
OFF2

**Acknowledge:**
IMMEDIATELY (POWER ON)

**Cause:**
The write request for one or several Safety Integrated parameters on the Motor Module (MM) was rejected.
Note:
This fault does not result in a safety stop response.
Fault value (r0949, interpret decimal):
10: An attempt was made to enable the STO function although this cannot be supported.
11: An attempt was made to enable the SBC function although this cannot be supported.
13: An attempt was made to enable the SS1 function although this cannot be supported.
14: An attempt was made to enable the safe motion monitoring function with the higher-level control, although this cannot be supported.
15: An attempt was made to enable the motion monitoring functions integrated in the drive although these cannot be supported.
16: An attempt was made to enable the PROFIsafe communication - although this cannot be supported or the version of the PROFIsafe driver used on the CU and MM is different.
18: An attempt was made to enable the PROFIsafe function for Basic Functions although this cannot be supported.
19: For ESR, an attempt was made to enable the delay for pulse suppression, although this cannot be supported.
33: An attempt was made to enable the motion monitoring functions without selection integrated in the drive (p9601.5, p9801.5), although this cannot be supported.
See also: r9771 (SI common functions (Control Unit)), r9871 (SI common functions (Motor Module)

**Remedy:**
Re fault value = 10, 11, 13, 14, 15, 16, 18, 19:
- check whether there are faults in the safety function alignment between the Control Unit and the Motor Module involved (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.
For fault value = 33:
- Deselect motion monitoring functions without selection integrated in drive (p9601.5, p9801.5) and select safety functions that are supported (see p9771/p9871),
or:
- use a Motor Module that supports the required function.
- upgrade the Motor Module software.
- upgrade the Control Unit software.

**Note:**
CU: Control Unit
ESR: Extended Stop and Retract
MM: Motor Module
SBC: Safe Brake Control
SI: Safety Integrated
SS1: Safe Stop 1 (corresponds to Stop Category 1 acc. to EN60204)
STO: Safe Torque Off / SH: Safe standstill
## List of faults and alarms

### F30662  Error in internal communications

| Message value: | %1 |
| Drive object:  | B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G |
| Reaction:      | OFF2 |
| Acknowledge:   | POWER ON |
| Cause:         | A module-internal communication error has occurred. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting. |
| Remedy:        | - carry out a POWER ON (power off/on).  
                  - upgrade firmware to later version.  
                  - contact the Hotline. |

### F30664  Error while booting

| Message value: | %1 |
| Drive object:  | B_INF, ENC, HUB, TB30, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G |
| Reaction:      | OFF2 |
| Acknowledge:   | POWER ON |
| Cause:         | An error has occurred during booting. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting. |
| Remedy:        | - carry out a POWER ON (power off/on).  
                  - upgrade firmware to later version.  
                  - contact the Hotline. |

### F30665  SI MM: System is defective

| Message value: | %1 |
| Drive object:  | VECTOR_G |
| Reaction:      | OFF2 |
| Acknowledge:   | IMMEDIATELY |
| Cause:         | A system defect was detected before the last boot or in the actual one. The system might have been rebooted (reset). Fault value (r0949, interpret hexadecimal): 200000 hex, 400000 hex:  
                  - Fault in the actual booting/operation.  
                  - parameters p9500 and p9300 are not the same (if Safety message C30711 is displayed at the same time). Additional values:  
                  - defect before the last time that the system booted. |
| Remedy:        | - carry out a POWER ON (power off/on).  
                  - upgrade firmware to later version.  
                  - contact the Hotline.  
                  For fault value = 2:  
                  - check parameters p9500 and p9300 to see if they are the same (if Safety message C30711 is displayed at the same time).  
                  Re fault value = 400000 hex:  
                  - ensure that the Control Unit is connected to the Power Module. |

### A30666 (F)  SI Motion MM: Steady-state (static) 1 signal at the F-DI for safety-relevant acknowledgement

| Message value: | - |
| Drive object:  | VECTOR_G |
| Reaction:      | NONE |
| Acknowledge:   | NONE |
| Cause:         | A logical 1 signal is present at the F-DI configured in p10106 for more than 10 seconds. If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.
Faults and alarms

Remedy: Set the fail-safe digital input (F-DI) to a logical 0 signal (p10106).
Note: F-DI: Failsafe Digital Input

Reaction upon F: NONE

Acknowl. upon F: IMMEDIATELY

F30672 SI CU: Control Unit software incompatible
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The existing Control Unit software does not support the safe drive-based motion monitoring function.
Note: This fault results in a STOP A that cannot be acknowledged.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy: - check whether there are faults in the safety function alignment between the Control Unit and the Motor Module (F01655, F30655) and if required, carry out diagnostics for the faults involved.
- use a Control Unit that supports the safe motion monitoring function.
- upgrade the Control Unit software.
Note: SI: Safety Integrated

F30674 SI Motion MM: Safety function not supported by PROFIsafe telegram
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: POWER ON
Cause: The monitoring function enabled in p9301 and p9801 is not supported by the currently set PROFIsafe telegram (p9811).
Note: This fault does not result in a safety stop response.
Fault value (r0949, interpret bitwise binary):
Bit 24 = 1: Transfer SLS (SG) limit value via PROFIsafe not supported (p9301.24).
Bit 25 = 1: Transfer safe position via PROFIsafe is not supported (p9301.25).

Remedy: - deselect the monitoring function involved (p9301, p9801).
- set the matching PROFIsafe telegram (p9811).
Note: SI: Safety Integrated
SLS: Safely-Limited Speed
SP: Safe Position

F30680 SI Motion MM: Checksum error safety monitoring functions
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The actual checksum calculated by the Motor Module and entered in r9398 over the safety-relevant parameters does not match the reference checksum saved in p9399 at the last machine acceptance.
Safety-relevant parameters have been changed or a fault is present.
Note: This fault results in a STOP A that can be acknowledged.
Fault value (r0949, interpret decimal):
0: Checksum error for Si parameters for motion monitoring.
1: Checksum error for Si parameters for component assignment.
Remedy:
- check the safety-relevant parameters and if required, correct.
- set the reference checksum to the actual checksum.
- execute the function "Copy RAM to ROM".
- perform a POWER ON if safety parameters requiring a POWER ON have been modified.
- carry out an acceptance test.

**F30681 SI Motion MM: Incorrect parameter value**

**Message value:**
Parameter: %1, supplementary information: %2

**Drive object:** VECTOR_G

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** The parameter cannot be parameterized with this value.

Note:
This message does not result in a safety stop response.
Fault value (r0949, interpret decimal): yyyyxxxx dec:

- yyyy = supplementary information,
- xxxx = parameter
- yyyy = 0: no additional information available.
- xxxx = 9301: It is not permissible to enable the function "<nx hysteresis and filtering" (p9301.16) in conjunction with the function "extended functions without selection" (p9801.5).
- xxxx = 9385: For Safety encoderless and synchronous motor, p9385 must be set to 4.
- yyyy = 9801:
  - yyyy = 1: If motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) are activated, then PROFIsafe (p9801.3 = 1) is not possible.
  - yyyy = 2: Extended functions without selection (p9801.5 = 1) are enabled, without enabling motion monitoring functions integrated in the drive (p9801.2).
  - yyyy = 3: Onboard F-DI are enabled, without enabling motion monitoring functions integrated in the drive (p9801.2).
  - yyyy = 5: Transfer of the SLS limit value via PROFIsafe (p9301.24) has been enabled, without enabling PROFIsafe.
  - yyyy = 6: Transfer of the safe position via PROFIsafe (p9301.25) has been enabled, without enabling PROFIsafe.

**Remedy:**
- correct the parameter (if required, also on the CU side, p9601).

- If the encoder parameters (p9526/p9326) have different values, start the copy function for SI parameters on the drive (p9700 = 57 hex).
- yyyy = 9301: Correct parameters p9501.16 and p9301.16, or deselect the extended functions without selection (p9801.5).
- yyyy = 9317: Further, p9316.0 should be checked.
- yyyy = 9801:
  - yyyy = 1: Only enable motion monitoring functions integrated in the drive (p9801.2 = 1) and extended functions without selection (p9801.5 = 1) – or only PROFIsafe (p9801.3 = 1).
  - yyyy = 2, 3: Enable motion monitoring functions integrated in the drive (p9801.2 = 1).
  - yyyy = 5: To transfer the SLS limit values via PROFIsafe (p9301.24 = 1), also enable PROFIsafe (p9801.3 = 1) and motion monitoring functions integrated in the drive (p9801.2 = 1).
  - yyyy = 6: For the safe position via PROFIsafe (p9301.25 = 1), also enable PROFIsafe (p9801.3 = 1) and motion monitoring functions integrated in the drive (p9801.2 = 1).
F30682  SI Motion MM: Monitoring function not supported
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The monitoring function enabled in p9301, p9501, p9601, p9801, p9307 or p9507 is not supported in this firmware version.
Note:  This message does not result in a safety stop response.
Fault value (r0949, interpret decimal):
1: Monitoring function SLP not supported (p9301.1).
2: Monitoring function SCA not supported (p9301.7 and p9301.8 ... 15).
3: Monitoring function SLS override not supported (p9301.5).
4: Monitoring function external ESR activation not supported (p9301.4).
5: Monitoring function F-DI in PROFIsafe not supported (p9301.30).
6: Enable actual value synchronization not supported (p9301.3).
12: This Control Unit does not support operation of safety functions with a higher-level control (e.g. SINUMERIK).
24: Monitoring function SDI not supported.
26: Hysteresis and filtering for SSM monitoring function without an encoder not supported (p9301.16).
27: This hardware does not support onboard F-DI and F-DO.
30: The firmware version of the Motor Module is older than the version of the Control Unit.
33: Safety functions without selection not supported (p9601.5, p9801.5).
34: This module does not support safe position via PROFIsafe.
36: Function "SS1 without OFF3" not supported.
Remedy:  - de-select the monitoring function involved (p9301, p9501, p9601, p9801, p9307, p9507).
- Upgrade the Motor Module firmware.
Note:
ESR: Extended Stop and Retract
SCA: Safe Cam / SN: Safe software cam
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
SLS: Safely-Limited Speed / SG: Safely reduced speed
SP: Safe Position
SS1: Safe Stop 1
See also: p9301 (SI Motion enable safety functions (Motor Module)), p9501 (SI Motion enable safety functions (Control Unit)), p9503 (SI Motion SCA (SN) enable (Control Unit)), p9601 (SI enable, functions integrated in the drive (Control Unit)), p9801 (SI enable, functions integrated in the drive (Motor Module)), r9871 (SI common functions (Motor Module))

F30683  SI Motion MM: SOS/SLS enable missing
Message value:  -
Drive object:  VECTOR_G
Reaction:  OFF2
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The safety-relevant basic function "SOS/SLS" is not enabled in p9301 although other safety-relevant monitoring functions are enabled.
Note:  This message does not result in a safety stop response.
Remedy:  Enable the function "SOS/SLS" (p9301.0) and carry out a POWER ON.
Note:
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9301 (SI Motion enable safety functions (Motor Module))
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</table>
| Cause: | For the function "Safely-Limited Position" (SE), a lower value is in p9534 than in p9535.  
Note:  
This fault does not result in a safety stop response.  
Fault value (r0949, interpret decimal):  
1: Limit values SLP1 interchanged.  
2: Limit values SLP2 interchanged. |
| Remedy: | Correct the limit values in p9534 and p9535 and carry out a POWER ON.  
Note:  
SI: Safety Integrated  
SLP: Safely-Limited Position / SE: Safe software limit switches |

| **F30685** | SI Motion MM: Safely-Limited Speed limit value too high |
| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | OFF2 |
| Acknowledge: | IMMEDIATELY (POWER ON) |
| Cause: | The limit value for the function "Safely-Limited Speed" (SLS) is greater than the speed that corresponds to an encoder limit frequency of 500 kHz.  
Note:  
This message does not result in a safety stop response.  
Fault value (r0949, interpret decimal):  
Maximum permissible speed. |
| Remedy: | Correct the limit values for SLS and carry out a POWER ON.  
Note:  
SI: Safety Integrated  
SLS: Safely-Limited Speed / SG: Safely reduced speed  
See also: p9331 (SI Motion SLS limit values (Motor Module)) |

| **F30688** | SI Motion MM: Actual value synchronization not permissible |
| Message value: | - |
| Drive object: | VECTOR_G |
| Reaction: | OFF2 |
| Acknowledge: | IMMEDIATELY (POWER ON) |
| Cause: | - It is not permissible to enable actual value synchronization for a 1-encoder system.  
- It is not permissible to simultaneously enable actual value synchronization and a monitoring function with absolute reference (SCA/SLP).  
- It is not permissible to simultaneously enable actual value synchronization and safe position via PROFIsafe.  
Note:  
This fault results in a STOP A that cannot be acknowledged. |
| Remedy: | - Either select the "actual value synchronization" function or parameterize a 2-encoder system.  
- Either de-select the function "actual value synchronization" or the monitoring functions with absolute reference (SCA/SLP) and carry out a POWER ON.  
- Either deselect the "actual value synchronization" function or do not enable "Safe position via PROFIsafe".  
Note:  
SCA: Safe Cam / SN: Safe software cam  
SI: Safety Integrated  
SLP: Safely-Limited Position / SE: Safe software limit switches  
SP: Safe Position  
See also: p9501 (SI Motion enable safety functions (Control Unit)), p9526 (SI Motion encoder assignment second channel) |
### F30692
**SI Motion MM: Parameter value not permitted for encoderless**

- **Message value:** Parameter: %1
- **Drive object:** VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:**
  The parameter cannot be parameterized with this value if encoderless motion monitoring functions have been parameterized in p9306.
  
  Note:
  This message does not result in a safety stop response.
  
  Fault value (r0949, interpret decimal):
  Parameter number with the incorrect value.
  
  See also: p9301 (SI Motion enable safety functions (Motor Module))

- **Remedy:**
  Correct the parameter value or de-select encoderless motion monitoring functions.
  
  See also: p9301 (SI Motion enable safety functions (Motor Module)), p9501 (SI Motion enable safety functions (Control Unit))

### A30693 (F)
**SI MM: Safety parameter settings changed, warm restart/POWER ON required**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  Safety parameters have been changed; these will only take effect following a warm restart or POWER ON.
  
  Notice:
  All changed parameters of the safety motion monitoring functions will only take effect following a warm restart or POWER ON.
  
  Alarm value (r2124, interpret decimal):
  Parameter number of the safety parameter which has changed, necessitating a warm restart or POWER ON.

- **Remedy:**
  - carry out a warm restart (p0009 = 30, p0976 = 2, 3).
  - carry out a POWER ON (power off/on) for all components.

  Note:
  Before performing an acceptance test, a POWER ON must be carried out for all components.

- **Reaction upon F:** NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** POWER ON

### C30700
**SI Motion MM: STOP A initiated**

- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:**
  The drive is stopped via a STOP A (pulses are suppressed via the safety shutdown path of the Control Unit).
  
  Possible causes:
  - stop request from the Control Unit.
  - pulses not suppressed after a parameterized time (p9357) after test stop selection.
  - subsequent response to the message C30706 “SI Motion MM: SAM/SBR limit exceeded”.
  - subsequent response to the message C30714 “SI Motion MM: Safely-Limited Speed exceeded”.
  - subsequent response to the message C30701 “SI Motion MM: STOP B initiated”.
  - subsequent response to the message C01715 “SI Motion CU: Safely-limited position exceeded”.
  - subsequent response to the message C30716 “SI Motion MM: tolerance for safe motion direction exceeded”.

- **Remedy:**
  - remove the cause to the fault on the Control Unit.
  - check the value in p9357, if required, increase the value.
  - check the shutdown path of the Control Unit (check DRIVE-CLiQ communication).
  - carry out a diagnostics routine for message C30706.
  - carry out a diagnostics routine for message C30714.
  - carry out a diagnostics routine for message C30701.
  - carry out a diagnostics routine for message C30715.
  - carry out a diagnostics routine for message C30716.
  - replace the Motor Module/Power Module
  - replace Control Unit.

  This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe brake ramp monitoring)
SI: Safety Integrated

### C30701
**SI Motion MM: STOP B initiated**

**Message value:** -
**Drive object:** VECTOR_G
**Reaction:** NONE (OFF3)
**Acknowledge:** IMMEDIATELY (POWER ON)
**Cause:**
The drive is stopped via a STOP B (braking along the OFF3 ramp).
As a result of this fault, after the time parameterized in p9356 has expired or after the speed threshold parameterized in p9360 has been fallen below, message C30700 "SI Motion MM: STOP A initiated" is output.
Possible causes:
- stop request from the Control Unit.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C30711 "SI Motion MM: Defect in a monitoring channel".
- subsequent response to the message C30707 "SI Motion MM: tolerance for safe operating stop exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".

**Remedy:**
- remove the cause to the fault on the Control Unit.
- carry out a diagnostics routine for message C30714.
- carry out a diagnostics routine for message C30711.
- carry out a diagnostics routine for message C30707.
- carry out a diagnostics routine for message C30715.
- carry out a diagnostics routine for message C30716.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.

### C30706
**SI Motion MM: SAM/SBR limit exceeded**

**Message value:** -
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** IMMEDIATELY (POWER ON)
**Cause:**
Motion monitoring functions with encoder (p9306 = 0) or encoderless with set acceleration monitoring (p9306 = 3):
SAM - safe acceleration monitoring. After initiating STOP B (SS1) or STOP C (SS2), the speed has exceeded the selected tolerance.
Motion monitoring functions encoderless with set brake ramp monitoring (p9306 = 1):
SBR - Safe brake ramp monitoring. After initiating STOP B (SS1) or SLS changeover to the lower speed stage, the speed has exceeded the selected tolerance.
- via F-DI or PROFIsafe.
The drive is shut down by the message C30700 "SI Motion MM: STOP A initiated".

**Remedy:**
Check the braking behavior and, if necessary, adapt the tolerance for the "SAM" function or modify the parameter settings for the "SBR" function.
This message can be acknowledged without a POWER ON as follows:
- motion monitoring functions integrated in the drive: via Terminal Module 54F (TM54F) or PROFIsafe
Note:
SAM: Safe Acceleration Monitor (safe acceleration monitoring)
SBR: Safe Brake Ramp (safe ramp monitoring)
SI: Safety Integrated
See also: p9348, p9381, p9382, p9383, p9648

### C30707
**SI Motion MM: Tolerance for safe operating stop exceeded**

**Message value:** -
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** IMMEDIATELY (POWER ON)
**Cause:**
The actual position has distanced itself further from the target position than the standstill tolerance.
The drive is shut down by the message C30701 "SI Motion MM: STOP B initiated".
Remedy: - check whether safety faults are present and if required carry out the appropriate diagnostic routines for the particular faults.
- check whether the standstill tolerance matches the accuracy and control dynamic performance of the axis.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop
See also: p9530 (SI Motion standstill tolerance (Control Unit))

C30708  SI Motion MM: STOP C initiated
Message value: -
Drive object: VECTOR_G
Reaction: STOP2
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP C (braking along the OFF3 ramp).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
See also: p9552 (SI Motion transition time STOP C to SOS (SBH) (Control Unit))
Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for messages C30714, C30715, C30716.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C30709  SI Motion MM: STOP D initiated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP D (braking along the path).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the Control Unit.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
See also: p9353 (SI Motion transition time STOP D to SOS (Motor Module)), p9553 (SI Motion transition time STOP D to SOS (SBH) (Control Unit))
Remedy: - remove the cause of the fault at the control.
- carry out a diagnostics routine for messages C30714, C30715, C30716.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
Note:
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

C30710  SI Motion MM: STOP E initiated
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive is stopped via a STOP E (retraction motion).
"Safe Operating Stop" (SOS) is activated after the parameterized time has expired.
Possible causes:
- stop request from the higher-level control.
- subsequent response to the message C30714 "SI Motion MM: Safely-Limited Speed exceeded".
- subsequent response to the message C01715 "SI Motion CU: Safely-limited position exceeded".
- subsequent response to the message C30716 "SI Motion MM: tolerance for safe motion direction exceeded".
See also: p9354 (SI Motion transition time STOP E to SOS (Motor Module)), p9554 (SI Motion transition time STOP E to SOS (SBH) (Control Unit))

**Remedy:**
- remove the cause of the fault at the control.
- carry out a diagnostics routine for messages C30714, C30715, C30716.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.

**Note:**
SI: Safety Integrated
SOS: Safe Operating Stop / SBH: Safe operating stop

### C30711
#### SI Motion MM: Defect in a monitoring channel

**Message value:** %1
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:**
When cross-comparing the two monitoring channels, the drive detected a difference between the input data or results of the monitoring functions and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.

If at least one monitoring function is active, then after the parameterized timer has expired, the message C30701 "SI Motion: STOP B initiated" is output. The message is output with message value 1031 when the Sensor Module hardware is replaced.

The following message values may also occur in the following cases if the cause that is explicitly mentioned does not apply:
- differently parameterized cycle times (p9500/p9300, p9511/p9311).
- differently parameterized axis types (p9502/p9302).
- excessively fast cycle times (p9500/p9300, p9511/p9311).
- incorrect synchronization.

**Message value (r9749, interpret decimal):**

- The significance of the individual message values is described in safety message C01711 of the Control Unit.
- Number of the cross-compared data that resulted in this message.
- 0 ... 999:
  - 1000: Watchdog timer has expired. Too many signal changes have occurred at safety-relevant inputs.
  - 1001: Initialization error of watchdog timer.
  - 1003: Reference tolerance exceeded.
  - When the user agreement is set, the difference between the new reference point that has been determined after power up (absolute encoder) or reference point approach (distance-coded or incremental measuring system) and the safe actual position (saved value + traversing distance) is greater than the reference tolerance (p9344). In this case, the user agreement is withdrawn.
  - 1011: Acceptance test status between the monitoring channels differ.
  - 1012: Plausibility violation of the actual value from the encoder.
  - 1020: Cyc. communication failure between the monit. cycles.
  - 1021: Cyc. communication failure between the monit. channel and Sensor Module.
  - 1023: Error in the effectiveness test in the DRIVE-CLIQ encoder.
  - 1030: Encoder fault detected from another monitoring channel.
  - 1031: Data transfer error between the monitoring channel and the Sensor Module (p9526/p9326).
  - 1040: Pulses suppressed with active encoderless monitoring functions.
  - 1041: Current absolute value too low (encoderless)
  - 1042: Current/voltage plausibility error
  - 1043: Too many acceleration phases
  - 1044: Actual current values plausibility error.
  - 1045: CRC of the standstill position incorrect.
- 5000 ... 5140: PROFIsafe message values.
  - For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
- 6000 ... 6166: PROFIsafe message values (PROFIsafe driver for PROFIBUS DP V1/V2 and PROFINET).
  - For these fault values, the failsafe control signals (failsafe values) are transferred to the safety functions.
Faults and alarms

List of faults and alarms

7000 ... 7002:
Message values of the "Safe position via PROFIsafe" function.
See also: p9555 (SI Motion transition time STOP F to STOP B (Control Unit)), r9725 (SI Motion, diagnostics STOP F)

Remedy:
- Perform safe acknowledgment, set the user agreement in both monitoring channels simultaneously (within 2 s).
- check the mechanical system of the axis. It is possible that the axis was shifted when switched-off, and the last saved actual position no longer corresponds with the new actual position after the system has been powered up again.
- Increase the tolerance for the actual value comparison when referencing (p9344).
Then check the actual values, perform a POWER ON and set the user agreement again.

Re message value = 1004:
For 1., the following applies: Perform safe acknowledgment. Set the user agreement again.
For 2., the following applies: Perform safe acknowledgment. Only set the user agreement again if the axis has been referenced.

Re message value = 1030:
- check the encoder connection.
- if required, replace the encoder.

Re message value = 1031:
- start the copy function for the node identifier on the drive (p9700 = 1D hex).
- acknowledge the hardware CRC on the drive (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
The following always applies:
- check the encoder connection.
- if required, replace the encoder.

Re message value = 1040:
- de-select encoderless monitoring functions, select and de-select STO.
- if monitoring function is active, issue "SLS" pulse enable within 5 s of de-selecting STO.

Re other message values:
- the significance of the individual message values is described in safety message C01711.

Note:
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))

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C30712 SI Motion MM: Defect in F-IO processing

Message value: %1
Drive object: VECTOR_G

Reaction: IMMEDIATELY (POWER ON)

Cause:
When cross checking and comparing the two monitoring channels, the drive detected a difference between parameters or results of the F-IO processing and initiated a STOP F. One of the monitoring functions no longer reliably functions - i.e. safe operation is no longer possible.
The safety message C30711 with message value 0 is also displayed due to initiation of STOP F.
If at least one monitoring function is active, the safety message C30701 "SI Motion: STOP B initiated" is output after the parameterized timer has expired.

Message value (r9749, interpret decimal):
Number of the cross-compared data that resulted in this message.
Refer to the description of the message values in safety message C01712.

Remedy:
- check parameterization in the parameters involved and correct if required.
- ensure equality by copying the SI data to the second channel and then carry out an acceptance test.
- check monitoring clock cycle for equality (p9500, p9300).

Note:
This message can be acknowledged via F-DI or PROFIsafe.
See also: p9300 (SI Motion monitoring clock cycle (Motor Module)), p9500 (SI Motion monitoring clock cycle (Control Unit))
C30714   SI Motion MM: Safely-Limited Speed exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The drive had moved faster than that specified by the velocity limit value (p9331). The drive is stopped as a result of the configured stop response (p9363).
Message value (r9749, interpret decimal):
100: SLS1 exceeded.
200: SLS2 exceeded.
300: SLS3 exceeded.
400: SLS4 exceeded.
1000: Encoder limit frequency exceeded.
Remedy:
- check the traversing/motion program in the control.
- check the limits for "SLS" function and if required, adapt (p9331).
Note:
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.
SI: Safety Integrated
SLS: Safely-Limited Speed / SG: Safely reduced speed
See also: p9331 (SI Motion SLS limit values (Motor Module)), p9363 (SI Motion SLS stop response (Motor Module))

C30715   SI Motion MM: Safely-limited position exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The axis has moved past a parameterized position that is monitored by the "SLP" function.
Message value (r9749, interpret decimal):
10: SLP1 violated.
20: SLP2 violated.
Remedy:
- check the traversing/motion program in the control.
- check the limits for "SLP" function and if required, adapt (p9534, p9535).
This message can be acknowledged as follows:
- motion monitoring functions with SINUMERIK: Via the machine control panel
Note:
SI: Safety Integrated
SLP: Safely-Limited Position / SE: Safe software limit switches
See also: p9334 (SI Motion SLP upper limit values (Motor Module)), p9335 (SI Motion SLP lower limit values (Motor Module))

C30716   SI Motion MM: Tolerance for safe motion direction exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The tolerance for the "safe motion direction" function was exceeded. The drive is stopped as a result of the configured stop response (p9366).
Message value (r9749, interpret decimal):
0: Tolerance for the "safe motion direction positive" function exceeded.
1: Tolerance for the "safe motion direction negative" function exceeded.
Remedy:
- check the traversing/motion program in the control.
- check the tolerance for "SDI" function and if required, adapt (p9364).
This message can be acknowledged as follows:
- Deselect the "SDI" function and select again.
- Perform a safe acknowledgment via F-DI or PROFIsafe.
### Faults and alarms

**List of faults and alarms**

Note:
SDI: Safe Direction (safe motion direction)
SI: Safety Integrated
See also: p9364 (SI Motion SDI tolerance (Motor Module)), p9365 (SI Motion SDI delay time (Motor Module)), p9366 (SI Motion SDI stop response (Motor Module))

#### C30730

**SI Motion MM: Reference block for dynamic safely limited speed invalid**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:**
The reference block transferred via PROFIsafe is negative.
A reference block is used to generate a referred velocity limit value based on the reference quantity "Velocity limit value SLS1" (p9331[0]).
The drive is stopped as a result of the configured stop response (p9363[0]).
Message value (%9749, interpret decimal):
requested, invalid reference block.

- **Remedy:**
In the PROFIsafe telegram, input data S_SLS_LIMIT_IST must be corrected.
This message can only be acknowledged via the Terminal Module 54F (TM54F) or PROFIsafe.

Note:
SI: Safety Integrated
SLS: Safely-Limited Speed

#### C30770

**SI Motion MM: Discrepancy error affecting the fail-safe inputs/outputs**

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:**
The fail-safe digital inputs/digital outputs (F-DI/F-DO) show a different state longer than that parameterized in p10002 / p10102.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex
xxxx: Discrepancy error for fail-safe digital inputs (F-DI).
Bit 0: Discrepancy error for F-DI 0
Bit 1: Discrepancy error for F-DI 1
...
yyyy: Discrepancy error for fail-safe digital outputs (F-DO).
Bit 0: Discrepancy error for F-DO 0
...

Note:
If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs.

- **Remedy:**
- check the wiring of the F-DI (contact problems).

Note:
This message can be acknowledged via F-DI or PROFIsafe.
Discrepancy errors of an F-DI can only be completely acknowledged if safe acknowledgement was carried out once the cause of the error was resolved (p10006 or acknowledgment via PROFIsafe). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.
For cyclic switching operations at the F-DI, it may be necessary to adapt the discrepancy time to the switching frequency.
If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
p10002 >= p9500 (discrepancy time must be no less than P9500)
p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)

If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.

Note:
When debounce p10017 is active, the discrepancy time is directly specified by the debounce time.
If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.

\[
p10002 < p10017 + 1 \text{ ms} - td \\
p10002 > td \\
p10002 >= p9500
\]

**Example:**
For a 12 ms SI sampling cycle and a switching frequency of 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:

\[
p10002 <= (110/2 \text{ ms}) - 12 \text{ ms} = 43 \text{ ms}
\]

Rounded-off, p10002 <= 36 ms is obtained (since the discrepancy time can only be accepted as a whole SI sampling cycle, the value will need to be rounded up or down to a whole SI sampling time value if the result is not an exact multiple of an SI sampling cycle).

**Note:**
F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

### A30772
**SI Motion MM: Test stop failsafe inputs/outputs active**

| Message value | - |
| Drive object | VECTOR_G |
| Reaction | NONE |
| Acknowledge | NONE |
| Cause | The test stop for the fail-safe digital inputs (F-DI) and/or fail-safe digital outputs (F-DO) is presently being performed. |
| Remedy | The alarm disappears automatically after successfully ending or canceling (when a fault condition occurs) the test stop. |

### F30773
**SI Motion MM: Test stop fault Motor Module**

| Message value | %1 |
| Drive object | VECTOR_G |
| Reaction | NONE |
| Acknowledge | IMMEDIATELY (POWER ON) |
| Cause | A fault has occurred on the MM side during the test stop for the fail-safe outputs. |
| Fault value (r0949, interpret hexadecimal): | RRRRWVXYZ hex: |
| R: Reserved. | |
| V: Actual state of the DO channel concerned (see X) on the CU (corresponds to the states read back from the hardware, bit 0 = DO 0, bit 1 = DO 1, etc.). | |
| W: Required state of the DO channel concerned (see X, bit 0 = DO 0, bit 1 = DO 1, etc.). | |
| X: DO channels involved, which indicate an error (bit 0 = DO 0, bit 1 = DO 1, etc.). | |
| Y: Reason for the test stop fault. | |
| Z: State of the test stop in which the fault has occurred. | |
| Y = 1: MM side in incorrect test stop state (internal fault). | |
| Y = 2: Expected states of the DOs were not fulfilled (CU305: readback via DI 22 / CU240 readback DI 2). | |
| Y = 3: Incorrect timer state on CU side (internal fault) | |
| Y = 4: Expected states of the diag DOs were not fulfilled (CU305: internal readback on MM channel). | |
| Y = 5: Expected states of the second diag DOs were not fulfilled (CU305: internal readback on CU channel). | |
| X and V indicate the DI or Diag-DO state dependent upon the reason for the fault (2, 4 or 5). | |
| In the event of multiple test stop faults, the first one that occurred is shown. | |
| Z: Test stop state and associated test actions | |
| Z = 0 ... 3: Synchronization phase of test stop between CU and Motor Module no switching operations | |
| Z = 4: DO + OFF and DO - OFF | |
| Z = 5: Check to see if states are as expected | |
| Z = 6: DO + ON and DO - ON | |
| Z = 7: Check to see if states are as expected | |
| Z = 8: DO + OFF and DO - ON | |
| Z = 9: Check to see if states are as expected | |
| Z = 10: DO + ON and DO - OFF | |
| Z = 11: Check to see if states are as expected | |
Z = 12: DO + OFF and DO - OFF
Z = 13: Check to see if states are as expected
Z = 14: End of test stop

Diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: 0/-/-/1
7: 0/-/-/0
9: 0/-/-/0
11: 1/-/-/1
13: 0/-/-/1

Second diag expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/-/-/1
7: -/-/-/0
9: -/-/-/1
11: -/-/-/0
13: -/-/-/1

Di expected states in table format:
Test stop state: Expectation Mode 1 / Mode 2 / Mode 3 / Mode 4
5: -/1/1/-
7: -/0/0/-
9: -/0/1/-
11: -/0/1/-
13: -/1/1/-

Example:
Fault F01773 (CU) is signaled with fault value = 0001_0127 and fault F30773 (MM) is signaled with fault value 0000_0127.
This means that in state 7 (Z = 7) the state of the external readback signal was not set correctly (Y = 2) after DO-0
(X = 1) was switched to ON/ON.
Fault value 0001_0127 indicates that 0 was expected (W = 0) and 1 (V = 1) was read back from the hardware.
Fault value 0000_0127 on the MM indicates that the states were as expected.
In the case of fault F30773, W and V are always identical; a value of 0 always means that 0 was expected at the
readback input but was not present on the other channel (CU).

Remedy: Check the wiring of the F-DOs and restart the test stop.
Note: The fault is withdrawn if the test stop is successfully completed.
In the event of multiple test stop faults, the first one that occurred is shown.
Once the test stop has been restarted the next queued test stop fault will be signaled (if there is one).

C30797 SI Motion MM: Axis not safely referenced
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The standstill position saved before powering down does not match the actual position determined at power-up.
Message value (r9749, interpret decimal):
1: Axis not referenced.
2: User agreement missing.
Remedy: If safe automatic referencing is not possible the user must issue a user agreement for the new position using the
softkey. This mean that this position is then designated as safety-relevant.
Note:
SI: Safety Integrated

C30798 SI Motion MM: Test stop running
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The test stop is active.
Remedy: Not necessary.
The message is withdrawn when the test stop is finished.
### List of faults and alarms

#### C30799
**SI Motion MM: Acceptance test mode active**
- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** The acceptance test mode is active. The POWER ON signals of the safety-relevant motion monitoring functions can be acknowledged during the acceptance test using the acknowledgement functions of the higher-level control.
- **Remedy:** Not necessary. The message is withdrawn when exiting the acceptance test mode.

#### N30800 (F)
**Power unit: Group signal**
- **Message value:** -
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** NONE
- **Cause:** The power unit has detected at least one fault.
- **Remedy:** Evaluate the other messages that are presently available.

#### F30801
**Power unit DRIVE-CLiQ: Sign-of-life missing**
- **Message value:** Component number: %1, fault cause: %2
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned. The computing time load might be too high. Fault cause:
  - 10 (= 0A hex):
    - The sign-of-life bit in the receive telegram is not set.
  - Note regarding the message value:
    - The individual information is coded as follows in the message value (r0949/r2124):
      - 0000yyxx hex: yy = component number, xx = error cause
- **Remedy:**
  - check the electrical cabinet design and cable routing for EMC compliance
  - remove DRIVE-CLiQ components that are not required.
  - de-select functions that are not required.
  - if required, increase the sampling times (p0112, p0115).
  - replace the component involved.

#### F30802
**Power unit: Time slice overflow**
- **Message value:** -
- **Drive object:** B_INF, VECTOR_G
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** A time slice overflow has occurred.
- **Remedy:**
  - carry out a POWER ON (power off/on) for all components.
  - upgrade firmware to later version.
  - contact the Hotline.
## List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30804</td>
<td>Power unit: CRC</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>A CRC error has occurred for the power unit.</td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
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<td>- upgrade firmware to later version.</td>
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<td></td>
<td>- contact the Hotline.</td>
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<tr>
<td></td>
<td>Reaction upon N: NONE</td>
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<td></td>
<td>Acknowl. upon N: NONE</td>
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<td>Reaction upon A: NONE</td>
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<td>Acknowl. upon A: NONE</td>
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<tr>
<td>F30805</td>
<td>Power unit: EPROM checksum error</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>Internal parameter data is corrupted.</td>
<td>Replace the module.</td>
</tr>
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<td></td>
<td>Fault value (r0949, interpret hexadecimal):</td>
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<td>01: EEPROM access error.</td>
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<td>02: Too many blocks in the EEPROM.</td>
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<tr>
<td>F30809</td>
<td>Power unit: Switching information not valid</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.</td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
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<td></td>
<td>- upgrade firmware to later version.</td>
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<td></td>
<td>- contact the Hotline.</td>
</tr>
<tr>
<td>A30810</td>
<td>Power unit: Watchdog timer</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>When booting it was detected that the cause of the previous reset was an SAC watchdog timer overflow.</td>
<td>- carry out a POWER ON (power off/on) for all components.</td>
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<td></td>
<td>- upgrade firmware to later version.</td>
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<td></td>
<td>- contact the Hotline.</td>
</tr>
<tr>
<td></td>
<td>Reaction upon F: NONE</td>
<td>NONE (OFF2)</td>
<td></td>
<td></td>
<td>IMMEDIATELY</td>
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<tr>
<td></td>
<td>Acknowl. upon F: IMMEDIATELY</td>
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<tr>
<td>F30820</td>
<td>Power unit DRIVE-CLiQ: Telegram error</td>
<td>Component number: %1, fault cause: %2</td>
<td>B_INF, VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned.</td>
<td></td>
</tr>
</tbody>
</table>
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex):
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance.
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F30835  Power unit DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F30836  Power unit DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
### F30837 Power unit DRIVE-CLiQ: Component fault

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.  
Fault cause:  
32 (= 20 hex): Error in the telegram header.  
**Remedy:**  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).  
- check the electrical cabinet design and cable routing for EMC compliance  
- if required, use another DRIVE-CLiQ socket (p9904).  
- replace the component involved.

### F30845 Power unit DRIVE-CLiQ: Cyclic data transfer error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit concerned.  
Fault cause:  
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.  
**Remedy:**  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).  
- check the electrical cabinet design and cable routing for EMC compliance  
- if required, use another DRIVE-CLiQ socket (p9904).  
- replace the component involved.

### F30850 Power unit: Internal software error

**Message value:** %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** Infeed: OFF1 (NONE, OFF2)  
Vecor: OFF1 (NONE, OFF2, OFF3)  
**Acknowledge:** POWER ON  
**Cause:** An internal software error has occurred in the power unit.  
Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.  
**Remedy:**  
- replace power unit.  
- if required, upgrade the firmware in the power unit.  
- contact the Hotline.
**F30851**  
**Power unit DRIVE-CLiQ (CU): Sign-of-life missing**

**Message value:**  
Component number: %1, fault cause: %2

**Drive object:**  
B_INF, VECTOR_G

**Reaction:**  
Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (NONE, OFF1, OFF3)

**Acknowledge:**  
IMMEDIATELY

**Cause:**  
A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.  
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.  
Fault cause:
10 (= 0A hex):  
The sign-of-life bit in the receive telegram is not set.  
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

**Remedy:**  
Upgrade the firmware of the component involved.

---

**A30853**  
**Power unit: Sign-of-life error cyclic data**

**Message value:**  
-

**Drive object:**  
B_INF, VECTOR_G

**Reaction:**  
NONE

**Acknowledge:**  
NONE

**Cause:**  
The power unit has detected that the cyclic setpoint telegrams of the Control Unit have not been updated on time. At least two sign-of-life errors have occurred within the window set in p7788.

**Remedy:**  
- check the electrical cabinet design and cable routing for EMC compliance  
- reduce the size of the window (p7788) for monitoring.

---

**F30860**  
**Power unit DRIVE-CLiQ (CU): Telegram error**

**Message value:**  
Component number: %1, fault cause: %2

**Drive object:**  
B_INF, VECTOR_G

**Reaction:**  
OFF2

**Acknowledge:**  
IMMEDIATELY

**Cause:**  
A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.  
Fault cause:
1 (= 01 hex):  
Checksum error (CRC error).  
2 (= 02 hex):  
Telegram is shorter than specified in the length byte or in the receive list.  
3 (= 03 hex):  
Telegram is longer than specified in the length byte or in the receive list.  
4 (= 04 hex):  
The length of the receive telegram does not match the receive list.  
5 (= 05 hex):  
The type of the receive telegram does not match the receive list.  
6 (= 06 hex):  
The address of the power unit in the telegram and in the receive list do not match.  
9 (= 09 hex):  
The error bit in the receive telegram is set.  
16 (= 10 hex):  
The receive telegram is too early.  
17 (= 11 hex):  
CRC error and the receive telegram is too early.  
18 (= 12 hex):  
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.  
19 (= 13 hex):  
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.  
20 (= 14 hex):  
The length of the receive telegram does not match the receive list and the receive telegram is too early.  
21 (= 15 hex):  
The type of the receive telegram does not match the receive list and the receive telegram is too early.
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22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F30875  Power unit DRIVE-CLiQ (CU): Supply voltage failed
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause: 9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F30885  CU DRIVE-CLiQ (CU): Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved. The nodes do not send and receive in synchronism.
Fault cause: 26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)
### F30886 PU DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved. Data were not able to be sent.  
Fault cause:  
65 (= 41 hex):  
Telegram type does not match send list.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Carry out a POWER ON.

### F30887 Power unit DRIVE-CLiQ (CU): Component fault

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** Fault detected on the DRIVE-CLiQ component (power unit) involved. Faulty hardware cannot be excluded.  
Fault cause:  
32 (= 20 hex):  
Error in the telegram header.  
35 (= 23 hex):  
Receive error: The telegram buffer memory contains an error.  
66 (= 42 hex):  
Send error: The telegram buffer memory contains an error.  
67 (= 43 hex):  
Send error: The telegram buffer memory contains an error.  
96 (= 60 hex):  
Response received too late during runtime measurement.  
97 (= 61 hex):  
Time taken to exchange characteristic data too long.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts,...).  
- check the electrical cabinet design and cable routing for EMC compliance  
- if required, use another DRIVE-CLiQ socket (p9904).  
- replace the component involved.

### F30895 PU DRIVE-CLiQ (CU): Alternating cyclic data transfer error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, TM150, TM31, VECTOR_G  
**Reaction:**  
Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.  
Fault cause:  
11 (= 0B hex):  
Synchronization error during alternating cyclic data transfer.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Carry out a POWER ON.  
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)
Faults and alarms

List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30896</td>
<td>Power unit DRIVE-CLiQ (CU): Inconsistent component properties</td>
<td>Component number: %1</td>
<td>B_INF, VECTOR_G</td>
<td>Infeed: OFF2 (NONE, OFF1) Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)</td>
<td>IMMEDIATELY</td>
<td>The properties of the DRIVE-CLiQ component (power unit), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced. Fault value (r0949, interpret decimal): Component number.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- carry out a POWER ON. - when a component is replaced, the same component type and if possible the same firmware version should be used. - when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).</td>
<td></td>
</tr>
<tr>
<td>F30899</td>
<td>Power unit: Unknown fault</td>
<td>New message: %1</td>
<td>B_INF, VECTOR_G</td>
<td>Infeed: NONE (OFF1, OFF2) Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>A fault occurred on the power unit that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Fault value (r0949, interpret decimal): Fault number. Note: If required, the significance of this new fault can be read about in a more recent description of the Control Unit.</td>
<td></td>
</tr>
<tr>
<td>(N, A)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- replace the firmware on the power unit by an older firmware version (r0128). - upgrade the firmware on the Control Unit (r0018).</td>
<td></td>
</tr>
<tr>
<td>F30903</td>
<td>Power unit: I2C bus error occurred</td>
<td>%1</td>
<td>B_INF, VECTOR_G</td>
<td>Infeed: NONE (OFF1, OFF2) Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
<td>IMMEDIATELY</td>
<td>Communications error with an EEPROM or A/D converter. Fault value (r0949, interpret hexadecimal): 80000000 hex: - internal software error. 00000001 hex ... 0000FFFF hex: - module fault.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- upgrade firmware to later version. Re fault value = 08000000 hex: - replace the module.</td>
<td></td>
</tr>
</tbody>
</table>
### List of faults and alarms

**F30907** Power unit: FPGA configuration unsuccessful

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>During initialization within the power unit, an internal software error has occurred.</td>
</tr>
</tbody>
</table>
| Remedy:        | - if required, upgrade the firmware in the power unit.  
                  - replace power unit.  
                  - contact the Hotline. |

**A30920 (F)** Power unit: Temperature sensor fault

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>When evaluating the temperature sensor, an error occurred.</td>
</tr>
</tbody>
</table>
| Note:          | A temperature sensor is connected to the following terminals:  
                  - "Booksise" format: X21.1/.2 or X22.1/.2  
                  - "Chassis" format: X41.4/.3  
                  Information on temperature sensors is provided in the following literature for example:  
                  SINAMICS S120 Function Manual Drive Functions |
| Remedy:        | - make sure that the sensor is connected correctly.  
                  - replace the sensor.  
                  Reaction upon F: Infeed: NONE (OFF1, OFF2)  
                  Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
                  Acknowl. upon F: IMMEDIATELY |

**F30950** Power unit: Internal software error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>POWER ON</td>
</tr>
<tr>
<td>Cause:</td>
<td>An internal software error has occurred.</td>
</tr>
</tbody>
</table>
| Note:          | Information about the fault source.  
                  Only for internal Siemens troubleshooting. |
| Remedy:        | - If necessary, upgrade the firmware in the power unit to a later version.  
                  - contact the Hotline. |

**A30999 (F, N)** Power unit: Unknown alarm

<table>
<thead>
<tr>
<th>Message value:</th>
<th>New message: %1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause:         | An alarm occurred on the power unit that cannot be interpreted by the Control Unit firmware.  
                  This can occur if the firmware on this component is more recent than the firmware on the Control Unit.  
                  Alarm value (r2124, interpret decimal):  
                  Alarm number.  
                  Note:  
                  If required, the significance of this new alarm can be read about in a more recent description of the Control Unit. |
| Remedy:        | - replace the firmware on the power unit by an older firmware version (r0128).  
                  - upgrade the firmware on the Control Unit (r0018). |
Faults and alarms

List of faults and alarms

F31100 (N, A) Encoder 1: Zero mark distance error

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowledge: PULSE INHIBIT
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance. For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.

The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal):

Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- replace the encoder or encoder cable

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31101 (N, A) Encoder 1: Zero mark failed

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowledge: PULSE INHIBIT
Cause: The 1.5 x parameterized zero mark distance was exceeded.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal):

Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- when p0437.1 is active, check p4686.
- replace the encoder or encoder cable

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
<table>
<thead>
<tr>
<th>F31103 (N, A)</th>
<th>Encoder 1: Amplitude error, track R</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>R track: %1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The amplitude of the reference track signal (track R) does not lie within the tolerance bandwidth for encoder 1.</td>
</tr>
<tr>
<td></td>
<td>The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret hexadecimal):</td>
</tr>
<tr>
<td></td>
<td>yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)</td>
</tr>
<tr>
<td></td>
<td>The response thresholds of the unipolar signal levels of the encoder are between &lt; 1400 mV and &gt; 3500 mV.</td>
</tr>
<tr>
<td></td>
<td>The response threshold for the differential signal level of the encoder is &lt; -1600 mV.</td>
</tr>
<tr>
<td></td>
<td>A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range</td>
</tr>
<tr>
<td></td>
<td>- check that the encoder cables and shielding are routed in compliance with EMC.</td>
</tr>
<tr>
<td></td>
<td>- check the plug connections and contacts of the encoder cable.</td>
</tr>
<tr>
<td></td>
<td>- check whether the zero mark is connected and the signal cables RP and RN have been connected correctly</td>
</tr>
<tr>
<td></td>
<td>- replace the encoder cable.</td>
</tr>
<tr>
<td></td>
<td>- if the coding disk is soiled or the lighting aged, replace the encoder.</td>
</tr>
</tbody>
</table>

| Reaction upon N: | NONE |
| Acknowledge upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowledge upon A: | NONE |

<table>
<thead>
<tr>
<th>F31110 (N, A)</th>
<th>Encoder 1: Serial communications error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Fault cause: %1 bin</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>Serial communication protocol transfer error between the encoder and evaluation module.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret binary):</td>
</tr>
<tr>
<td></td>
<td>Bit 0: Alarm bit in the position protocol.</td>
</tr>
<tr>
<td></td>
<td>Bit 1: Incorrect quiescent level on the data line.</td>
</tr>
<tr>
<td></td>
<td>Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).</td>
</tr>
<tr>
<td></td>
<td>Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.</td>
</tr>
<tr>
<td></td>
<td>Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.</td>
</tr>
<tr>
<td></td>
<td>Bit 5: Internal error in the serial driver: An illegal mode command was requested.</td>
</tr>
<tr>
<td></td>
<td>Bit 6: Timeout when cyclically reading.</td>
</tr>
<tr>
<td></td>
<td>Bit 7: Timeout for the register communication.</td>
</tr>
<tr>
<td></td>
<td>Bit 8: Protocol is too long (e.g. &gt; 64 bits).</td>
</tr>
<tr>
<td></td>
<td>Bit 9: Receive buffer overflow.</td>
</tr>
<tr>
<td></td>
<td>Bit 10: Frame error when reading twice.</td>
</tr>
<tr>
<td></td>
<td>Bit 11: Parity error.</td>
</tr>
<tr>
<td></td>
<td>Bit 12: Data line signal level error during the monoflop time.</td>
</tr>
<tr>
<td></td>
<td>Bit 13: Data line incorrect.</td>
</tr>
<tr>
<td></td>
<td>Bit 14: Fault for the register communication.</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Faults and alarms

List of faults and alarms

Remedy:
- Re fault value, bit 0 = 1:
  - Enc defect F31111 may provide additional details.
- Re fault value, bit 1 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 2 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 3 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable.
- Re fault value, bit 4 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 5 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 6 = 1:
  - Update Sensor Module firmware.
- Re fault value, bit 7 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 8 = 1:
  - Check parameterization (p0429.2).
- Re fault value, bit 9 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 10 = 1:
  - Check parameterization (p0429.2, p0449).
- Re fault value, bit 11 = 1:
  - Check parameterization (p0436).
- Re fault value, bit 12 = 1:
  - Check parameterization (p0429.6).
- Re fault value, bit 13 = 1:
  - Check data line.
- Re fault value, bit 14 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31111 (N, A) Encoder 1: Absolute encoder internal fault

Message value: Fault cause: %1 bin, additional information: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause: The absolute encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):

<table>
<thead>
<tr>
<th>yyyy = 0:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit 0: Lighting system failed.</td>
</tr>
<tr>
<td>Bit 1: Signal amplitude too low.</td>
</tr>
<tr>
<td>Bit 2: Position value incorrect.</td>
</tr>
<tr>
<td>Bit 3: Encoder power supply overvoltage condition.</td>
</tr>
<tr>
<td>Bit 4: Encoder power supply undervoltage condition.</td>
</tr>
<tr>
<td>Bit 5: Encoder power supply overcurrent condition.</td>
</tr>
<tr>
<td>Bit 6: The battery must be changed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>yyyy = 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit 0: Signal amplitude outside the control range.</td>
</tr>
<tr>
<td>Bit 1: Error multiturn interface</td>
</tr>
<tr>
<td>Bit 2: Internal data error (singleturn/multiturn not with single steps).</td>
</tr>
<tr>
<td>Bit 3: Error EEPROM interface.</td>
</tr>
<tr>
<td>Bit 4: SAR converter error.</td>
</tr>
<tr>
<td>Bit 5: Fault for the register data transfer.</td>
</tr>
<tr>
<td>Bit 6: Internal error identified at the error pin (nErr).</td>
</tr>
<tr>
<td>Bit 7: Temperature threshold exceeded or fallen below.</td>
</tr>
</tbody>
</table>

See also: p0491 (Motor encoder fault response ENCODER)
Remedy:

For \( yyy = 0 \):

Re fault value, bit 0 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLIQ socket: Replace the motor.

Re fault value, bit 1 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLIQ socket: Replace the motor.

Re fault value, bit 2 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLIQ socket: Replace the motor.

Re fault value, bit 3 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When a motor encoder with a direct DRIVE-CLIQ connection is used: Replace the motor.

Re fault value, bit 4 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When using a motor with DRIVE-CLIQ: Replace the motor.

Re fault value, bit 5 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLIQ socket: Replace the motor.

Re fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery back-up).
For \( yyy = 1 \):
Encoder is defective. Replace encoder.

Remedy:

For \( yyy = 0 \):

Re fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31112 (N, A) Encoder 1: Error bit set in the serial protocol

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause: The encoder sends a set error bit via the serial protocol.
Fault value (r0949, interpret binary):
Bit 0: Fault bit in the position protocol.

Remedy:

For fault value, bit 0 = 1:
In the case of an EnDat encoder, F31111 may provide further details.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31115 (N, A) Encoder 1: Amplitude error track A or B (\( A^2 + B^2 \))

Message value: A track: %1, B-track: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause: The amplitude (root of \( A^2 + B^2 \)) for encoder 1 exceeds the permissible tolerance.
Fault value (r0949, interpret hexadecimal):
\( yyyyxxxx \) hex:
\( yyyy \) = Signal level, track B (16 bits with sign).
\( xxxx \) = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV ±25%/+20%).
The response thresholds are < 170 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for sensors modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response thresholds are < 1070 mV and > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- ensure that the encoder housing is not subject to any axial force.

Reaction upon N: NONE
Acknow. upon N: NONE
Reaction upon A: NONE
Acknow. upon A: NONE

F31116 (N, A) Encoder 1: Amplitude error monitoring track A + B
Message value: A track: %1, B-track: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: The amplitude of the rectified encoder signals A and B and the amplitude from the roots of A^2 + B^2 for encoder 1 are not within the tolerance bandwidth.
Fault value (r0949, interpret hexadecimal):

yyyyxxxx hex:

yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 130 mV (observe the frequency response of the encoder) and > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).

Reaction upon N: NONE
Acknow. upon N: NONE
Reaction upon A: NONE
Acknow. upon A: NONE

F31117 (N, A) Encoder 1: Inversion error signals A/B/R
Message value: Fault cause: %1 bin
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.

Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), CU32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- Check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?

Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), the following applies:
- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
- For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CU32, CU310):
  - pin 10 (reference signal R) <-> pin 7 (encoder power supply, ground)
  - pin 11 (reference signal R inverted) <-> pin 4 (encoder power supply)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31118 (N, A) Encoder 1: Speed difference outside the tolerance range

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT

Cause:
For an HTL/TTL encoder, the speed difference has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.
Encoder 1 is used as motor encoder and can be effective has fault response to change over to encoderless operation.

Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0491 (Motor encoder fault response ENCODER), p0492

Remedy:
- check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31120 (N, A) Encoder 1: Power supply voltage fault

Message value: Fault cause: %1 bin
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT

Cause:
A power supply fault was detected for encoder 1.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
Bit 4: The 24 V power supply through the Power Module (PM) is overloaded.
Bit 5: Overcurrent at the EnDat connection of the converter.
Faults and alarms

List of faults and alarms

Bit 6: Overvoltage at the EnDat connection of the converter.
Bit 7: Hardware fault at the EnDat connection of the converter.

Note:
If the encoder cables 6FX2002-2EQ00-... and 6FX2002-2CH00-... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
Re fault value, bit 0 = 1:
- correct encoder cable connected?
- check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).
Re fault value, bit 1 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 2 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 3 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.
Re fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31121 (N, A) Encoder 1: Coarse position error

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (NONE)
Acknowledge: PULSE INHIBIT
Cause: For the actual value sensing, an error was detected on the module. As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.
See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31122 Encoder 1: Internal power supply voltage faulty

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER
Acknowledge: IMMEDIATELY
Cause: Fault in internal reference voltage of ASICs for encoder 1.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.
### List of faults and alarms

#### F31123 (N, A)  Encoder 1: Signal level A/B unipolar outside tolerance

**Message value:** Fault cause: %1 bin  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** Infeed: NONE  
Vector: ENCODER (IASC/DCBRAKE, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The unipolar level (AP/AN or BP/BN) for encoder 1 is outside the permissible tolerance.  
Fault value (r0949, interpret binary):  
Bit 0 = 1: Either AP or AN outside the tolerance.  
Bit 16 = 1: Either BP or BN outside the tolerance.  
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.  
The response thresholds are < 1700 mV and > 3300 mV.  
**Note:**  
The signal level is not evaluated unless the following conditions are satisfied:  
- Sensor Module properties available (r0459.31 = 1).  
- Monitoring active (p0437.31 = 1).  
See also: p0491 (Motor encoder fault response ENCODER)  
**Remedy:**  
- make sure that the encoder cables and shielding are installed in an EMC-compliant manner.  
- check the plug connections and contacts of the encoder cable.  
- check the short-circuit of a signal cable with mass or the operating voltage.  
- replace the encoder cable.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

#### F31125 (N, A)  Encoder 1: Amplitude error track A or B overcontrolled

**Message value:** A track: %1, B-track: %2  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** Infeed: NONE  
Vector: ENCODER (IASC/DCBRAKE, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The amplitude of track A or B for encoder 1 exceeds the permissible tolerance band.  
Fault value (r0949, interpret hexadecimal):  
yyyyxxxx hex:  
yyyy = Signal level, track B (16 bits with sign).  
xxxx = Signal level, track A (16 bits with sign).  
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (600 mV -25/+20 %).  
The response threshold is > 750 mV. This fault also occurs if the A/D converter is overcontrolled.  
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.  
Note for sensors modules for resolvers (e. g. SMC10):  
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is > 3582 mV.  
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.  
**Note:**  
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.  
See also: p0491 (Motor encoder fault response ENCODER)  
**Remedy:**  
- check that the encoder cables and shielding are routed in compliance with EMC.  
- replace the encoder or encoder cable.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE
### F31126 (N, A) Encoder 1: Amplitude AB too high

| Message value: | Amplitude: %1, Angle: %2 |
| Drive object: | B_INF, ENC, VECTOR_G |
| Reaction: | Infeed: NONE |
| Acknowledge: | PULSE INHIBIT |
| Cause: | The amplitude (root of $A^2 + B^2$ or $|A| + |B|$) for encoder 1 exceeds the permissible tolerance. |
| Fault value (r0949, interpret hexadecimal): |
| yyyy = Angle |
| xxx = Amplitude, i.e. root from $A^2 + B^2$ (16 bits without sign) |
| The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25%/+20%). |
| The response threshold for $(|A| + |B|)$ is $> 1120$ mV or the root of $(A^2 + B^2) > 955$ mV. |
| A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec. |
| The angle 0...FFFF hex corresponds to 0...360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B. |
| Note: |
| The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module. |
| See also: p0491 (Motor encoder fault response ENCODER) |
| Remedy: |
| - check that the encoder cables and shielding are routed in compliance with EMC. |
| - replace the encoder or encoder cable |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |

### F31129 (N, A) Encoder 1: Position difference, hall sensor/track C/D and A/B too large

| Message value: | %1 |
| Drive object: | B_INF, ENC, VECTOR_G |
| Reaction: | Infeed: NONE |
| Acknowledge: | PULSE INHIBIT |
| Cause: | The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical. |
| One period of track C/D corresponds to 360 ° mechanical. |
| One period of the Hall signal corresponds to 360 ° electrical. |
| The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough. |
| After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A31429. |
| Fault value (r0949, interpret decimal): |
| For track C/D, the following applies: |
| Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °). |
| For Hall signals, the following applies: |
| Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °). |
| See also: p0491 (Motor encoder fault response ENCODER) |
| Remedy: |
| - track C or D not connected. |
| - correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D. |
| - check that the encoder cables are routed in compliance with EMC. |
| - check the adjustment of the Hall sensor. |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |
### F31130 (N, A) Encoder 1: Zero mark and position error from the coarse synchronization

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Angular deviation, electrical: %1, angle, mechanical: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infed: NONE Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause:</td>
<td>After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out. When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical. When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical. Fault value (r0949, interpret hexadecimal): yyyyxxxx hex yyyy: Determined mechanical zero mark position (can only be used for track C/D). xxxx: Deviation of the zero mark from the expected position as electrical angle. Scaling: 32768 dec = 180 ° See also: p0491 (Motor encoder fault response ENCODER)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- Check p0431 and, if necessary, correct (trigger via p1990 = 1 if necessary). - check that the encoder cables are routed in compliance with EMC. - check the plug connections - if the Hall sensor is used as an equivalent for track C/D, check the connection. - Check the connection of track C or D. - replace the encoder or encoder cable</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Reaction upon A:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon A:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### F31131 (N, A) Encoder 1: Deviation, position incremental/absolute too large

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infed: NONE Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause:</td>
<td>Absolute encoder: When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected. Limit value for the deviation: - EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 &gt; 2 quadrants, EQN 1325 &gt; 50 quadrants). - other encoders: 15 pulses = 60 quadrants. Incremental encoder: When the zero pulse is passed, a deviation in the incremental position was detected. For equidistant zero marks, the following applies: - The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark. For distance-coded zero marks, the following applies: - the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair. Fault value (r0949, interpret decimal): Deviation in quadrants (1 pulse = 4 quadrants). See also: p0491 (Motor encoder fault response ENCODER)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check that the encoder cables are routed in compliance with EMC. - check the plug connections - replace the encoder or encoder cable - check whether the coding disk is dirty or there are strong ambient magnetic fields. - adapt the parameter for the clearance between zero marks (p0425). - if message output above speed threshold, reduce filter time if necessary (p0438).</td>
</tr>
</tbody>
</table>
### F31135 Encoder 1: Fault when determining the position

- **Message value:** Fault cause: %1 bin
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:** Infeed: NONE
  Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
The DRIVE-CLiQ encoder supplies status information via bits in an internal status/fault word. Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Fault value (r0949, interpret binary):
- Bit 0: F1 (safety status display)
- Bit 1: F2 (safety status display)
- Bit 2: Lighting (reserved)
- Bit 3: Signal amplitude (reserved)
- Bit 4: Position value (reserved)
- Bit 5: Overvoltage (reserved)
- Bit 6: Undervoltage (reserved)
- Bit 7: Overcurrent (reserved)
- Bit 8: Battery (reserved)
- Bit 16: Lighting (→ F3x135, x = 1, 2, 3)
- Bit 17: Signal amplitude (→ F3x135, x = 1, 2, 3)
- Bit 18: Singleturn position 1 (→ F3x135, x = 1, 2, 3)
- Bit 19: Overvoltage (→ F3x135, x = 1, 2, 3)
- Bit 20: Undervoltage (→ F3x135, x = 1, 2, 3)
- Bit 21: Overcurrent (→ F3x135, x = 1, 2, 3)
- Bit 22: Temperature exceeded (→ F3x405, x = 1, 2, 3)
- Bit 23: Singleturn position 2 (safety status display)
- Bit 24: Singleturn system (→ F3x136, x = 1, 2, 3)
- Bit 25: Singleturn power down (→ F3x135, x = 1, 2, 3)
- Bit 26: Multiturn position 1 (→ F3x136, x = 1, 2, 3)
- Bit 27: Multiturn position 2 (→ F3x136, x = 1, 2, 3)
- Bit 28: Multiturn system (→ F3x136, x = 1, 2, 3)
- Bit 29: Multiturn power down (→ F3x136, x = 1, 2, 3)
- Bit 30: Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)
- Bit 31: Multiturn battery (reserved)

**Remedy:** Replace DRIVE-CLiQ encoder.

### F31136 Encoder 1: Error when determining multiturn information

- **Message value:** Fault cause: %1 bin
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:** Infeed: NONE
  Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
The DRIVE-CLiQ encoder supplies status information via bits in an internal status/fault word. Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Fault value (r0949, interpret binary):
- Bit 0: F1 (safety status display)
- Bit 1: F2 (safety status display)
- Bit 2: Lighting (reserved)
- Bit 3: Signal amplitude (reserved)
- Bit 4: Position value (reserved)
- Bit 5: Overvoltage (reserved)
- Bit 6: Undervoltage (reserved)
- Bit 7: Overcurrent (reserved)
<table>
<thead>
<tr>
<th>Bit</th>
<th>Description</th>
<th>Fault Code</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Battery (reserved)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Replace DRIVE-CLiQ encoder.</td>
</tr>
<tr>
<td>16</td>
<td>Lighting (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Signal amplitude (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Singleturn position 1 (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Overvoltage (→ F3x135, x = 1, 2, 3)</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Undervoltage (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Overcurrent (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Temperature exceeded (→ F3x405, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>23</td>
<td>Singleturn position 2 (safety status display)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Singleturn system (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>Singleturn power down (→ F3x135, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>Multiturn position 1 (→ F3x136, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Multiturn position 2 (→ F3x136, x = 1, 2, 3)</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Multiturn system (→ F3x136, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Multiturn power down (→ F3x136, x = 1, 2, 3)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td>Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td>Multiturn battery (reserved)</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**F31137 Encoder 1: Internal fault when determining the position**

- **Message value:** Fault cause: %1 bin
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:** Infeed: NONE
  - Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
  - Fault value (r0949, interpret binary): Only for internal Siemens troubleshooting.
- **Remedy:** Replace encoder.

**F31138 Encoder 1: Internal error when determining multiturn information**

- **Message value:** Fault cause: %1 bin
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:** Infeed: NONE
  - Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
  - Fault value (r0949, interpret binary): Only for internal SIEMENS troubleshooting.
- **Remedy:** Replace encoder.

**F31150 (N, A) Encoder 1: Initialization error**

- **Message value:** %1
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:** Infeed: NONE
  - Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
- **Acknowledge:** PULSE INHIBIT
- **Cause:** Encoder functionality selected in p0404 is not operating correctly.
  - Fault value (r0949, interpret hexadecimal): Encoder malfunction.
  - The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
  - See also: p0404 (Encoder configuration effective), p0491 (Motor encoder fault response ENCODER)
- **Remedy:**
  - Check that p0404 is correctly set.
  - Check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
  - If relevant, note additional fault messages that describe the fault in detail.
- **Reaction upon N:** NONE
- **Acknow. upon N:** NONE
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Reaction upon A: NONE
Acknowl. upon A: NONE

F31151 (N, A) Encoder 1: Encoder speed for initialization AB too high
Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The encoder speed is too high during while initializing the sensor.
Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, de-activate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31152 (N, A) Encoder 1: Maximum input frequency exceeded
Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: ENCODER (NONE, OFF1, OFF2)
Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The maximum input frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
Actual input frequency in Hz.
See also: p0408 (Rotary encoder pulse No.)
Remedy: - Reduce the speed.
- Use an encoder with a lower pulse number (p0408).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31160 (N, A) Encoder 1: Analog sensor channel A failed
Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: ENCODER (NONE)
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause: The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4673).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy: For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4673).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
F31161 (N, A) Encoder 1: Analog sensor channel B failed

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: ENCODER (NONE)
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause:
The input voltage of the analog sensor is outside the permissible limits.
Fault value (r0949, interpret decimal):
1: Input voltage outside detectable measuring range.
2: Input voltage outside the measuring range set in (p4675).
3: The absolute value of the input voltage has exceeded the range limit (p4676).
Remedy:
For fault value = 1:
- check the output voltage of the analog sensor.
For fault value = 2:
- check the voltage setting for each encoder period (p4675).
For fault value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31163 (N, A) Encoder 1: Analog sensor position value exceeds limit value

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: ENCODER (NONE)
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause:
The position value has exceeded the permissible range of -0.5 ... +0.5.
Fault value (r0949, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy:
For fault value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
For fault value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31400 (F, N) Encoder 1: Alarm threshold zero mark distance error

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that
if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the
system.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Alarm value (r2124, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
### Faults and alarms

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<th>A31401 (F, N)</th>
<th>Encoder 1: Alarm threshold zero mark failed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The 1.5 x parameterized zero mark distance was exceeded. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Alarm value (r2124, interpret decimal): Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check that the encoder cables are routed in compliance with EMC. - check the plug connections - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the clearance between zero marks (p0425). - replace the encoder or encoder cable</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td><strong>Acknowl. upon F:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F31405 (N, A)</th>
<th>Encoder 1: Temperature in the encoder evaluation inadmissible</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The encoder evaluation for a motor with DRIVE-CLiQ has detected an inadmissible temperature. The fault threshold is 125 °C. Alarm value (r2124, interpret decimal): Measured board/module temperature in 0.1 °C.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Reaction upon A:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon A:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A31407 (F, N)</th>
<th>Encoder 1: Function limit reached</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The encoder has reached one of its function limits. A service is recommended.</td>
</tr>
</tbody>
</table>
List of faults and alarms

Faults and alarms

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Alarm value (r2124, interpret decimal):
1 : Incremental signals
3 : Absolute track
4 : Code connection

Remedy:
Perform service. Replace the encoder if necessary.

Note:
The actual functional reserve of an encoder can be displayed via r4651.
See also: p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)

Reaction upon F:
Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F:
IMMEDIATELY

Reaction upon N:
NONE

Acknowl. upon N:
NONE

A31410 (F, N) Encoder 1: Serial communications

Message value:
Fault cause: %1 bin

Drive object:
B_INF, ENC, VECTOR_G

Reaction:
NONE

Acknowledge:
NONE

Cause:
Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.

Reaction upon F:
Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F:
IMMEDIATELY

Reaction upon N:
NONE

Acknowl. upon N:
NONE

A31411 (F, N) Encoder 1: Absolute encoder signals internal alarms

Message value:
Fault cause: %1 bin, additional information: %2

Drive object:
B_INF, ENC, VECTOR_G

Reaction:
NONE

Acknowledge:
NONE

Cause:
The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):

yyyyyyyy hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Frequency exceeded (speed too high).
Bit 1: Temperature exceeded.
Bit 2: Control reserve, lighting system exceeded.
Bit 3: Battery discharged.
Bit 4: Reference point passed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multturn interface
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Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR_converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Replace encoder.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31412 (F, N) Encoder 1: Error bit set in the serial protocol

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowled: NONE

Cause: The encoder sends a set error bit via the serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.

Remedy: - carry out a POWER ON (power off/on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE

A31414 (F, N) Encoder 1: Amplitude error track C or D (C^2 + D^2)

Message value: C track: %1, D track: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowled: NONE

Cause: The amplitude (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

Note: If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.

Remedy: - check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY
A31415 (F, N)  Encoder 1: Amplitude alarm track A or B (A^2 + B^2)

Message value:  
Amplitude: %1, Angle: %2

Drive object:  
B_INF, ENC, VECTOR_G

Reaction:  
NONE

Acknowledge:  
NONE

Cause:  
The amplitude (root of A^2 + B^2) for encoder 1 exceeds the permissible tolerance.

Alarm value (r2124, interpret hexadecimal):

- yyyy = Angle  
- xxxx = Amplitude, i.e. root from A^2 + B^2 (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold is < 230 mV (observe the frequency response of the encoder).

A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.

The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note:  
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

See also: p0491 (Motor encoder fault response ENCODER)

Remedy:  
- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon F:  
Infeed: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N:  
NONE

Acknowl. upon N: NONE

A31418 (F, N)  Encoder 1: Speed difference per sampling rate exceeded

Message value:  
%1

Drive object:  
B_INF, ENC, VECTOR_G

Reaction:  
NONE

Acknowledge:  
NONE

Cause:  
For an HTL/TTL encoder, the speed difference between two sampling cycles has exceeded the value in p0492.

The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.

Alarm value (r2124, interpret decimal):

- Only for internal Siemens troubleshooting.

See also: p0492

Remedy:  
- check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the setting of p0492.

Reaction upon F:  
Infeed: NONE (OFF1, OFF2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N:  
NONE

Acknowl. upon N: NONE
## A31419 (F, N) Encoder 1: Track A or B outside tolerance

**Message value:** %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The amplitude/phase/offset correction for track A or B is at the limit.  
Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27  
Phase: <84 degrees or >96 degrees  
SMC20: Offset correction: +/-140 mV  
SMC10: Offset correction: +/-650 mV  
Alarm value (r2124, interpret hexadecimal):  
xxxx1: Minimum of the offset correction, track B  
xxxx2: Maximum of the offset correction, track B  
xx1xx: Minimum of the offset correction, track A  
xx2xx: Maximum of the offset correction, track A  
x1xxx: Minimum of the phase error correction  
x2xxx: Maximum of the phase error correction  
1xxxx: Minimum of the cubic correction  
2xxxx: Maximum of the cubic correction  
See also: p0491 (Motor encoder fault response ENCODER)  
**Remedy:**  
- check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).  
- check the plug connections (also the transition resistance).  
- check the encoder signals.  
- replace the encoder or encoder cable  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

## A31421 (F, N) Encoder 1: Coarse position error

**Message value:** %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** For the actual value sensing, an error was detected. As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.  
Alarm value (r2124, interpret decimal):  
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.  
**Remedy:**  
- For a standard encoder with cable, contact the manufacturer where relevant.  
- correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A31422 (F, N)</td>
<td>Encoder 1: Pulses per revolution square-wave encoder outside tolerance bandwidth</td>
<td>%1</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The measured zero mark distance does not correspond to the parameterized zero mark distance. This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684. The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder). Alarm value (r2124, interpret decimal): accumulated differential pulses in encoder pulses. See also: p0491 (Motor encoder fault response ENCODER)</td>
<td>- check that the encoder cables are routed in compliance with EMC. - check the plug connections - check the encoder type (encoder with equidistant zero marks). - adapt the parameter for the distance between zero marks (p0424, p0425). - replace the encoder or encoder cable</td>
</tr>
<tr>
<td>A31429 (F, N)</td>
<td>Encoder 1: Position difference, hall sensor/track C/D and A/B too large</td>
<td>%1</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical. One period of track C/D corresponds to 360 ° mechanical. One period of the Hall signal corresponds to 360 ° electrical. The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough. Alarm value (r2124, interpret decimal): For track C/D, the following applies: Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °). For Hall signals, the following applies: Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °). See also: p0491 (Motor encoder fault response ENCODER)</td>
<td>- track C or D not connected. - correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D. - check that the encoder cables are routed in compliance with EMC. - check the adjustment of the Hall sensor.</td>
</tr>
<tr>
<td>A31431 (F, N)</td>
<td>Encoder 1: Deviation, position incremental/absolute too large</td>
<td>%1</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>When the zero pulse is passed, a deviation in the incremental position was detected.</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

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For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- Clean coding disk or remove strong magnetic fields.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31432 (F, N) Encoder 1: Rotor position adaptation corrects deviation
Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: For track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check encoder limit frequency.
- adapt the parameter for the distance between zero marks (p0424, p0425).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31442 (F, N) Encoder 1: Battery voltage pre-alarm
Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.

Remedy: Replace battery.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### A31443 (F, N) Encoder 1: Unipolar CD signal level outside specification

**Message value:** Fault cause: %1 bin  
**Drive object:** B-INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
The unipolar level (CP/CN or DP/DN) for encoder 1 is outside the permissible tolerance.  
Alarm value (r2124, interpret binary):  
Bit 0 = 1: Either CP or CN outside the tolerance.  
Bit 16 = 1: Either DP or DN outside the tolerance.  
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.  
The response thresholds are < 1700 mV and > 3300 mV.  
Note:  
The signal level is not evaluated unless the following conditions are satisfied:  
- Sensor Module properties available (r0459.31 = 1).  
- Monitoring active (p0437.31 = 1).  
See also: p0491 (Motor encoder fault response ENCODER)  
**Remedy:**  
- check that the encoder cables and shielding are routed in compliance with EMC.  
- check the plug connections and contacts of the encoder cable.  
- are the C/D tracks connected correctly (have the signal lines CP and CN or DP and DN been interchanged)?  
- replace the encoder cable.  
**Reaction upon F:** Infeed: NONE  
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A31460 (N) Encoder 1: Analog sensor channel A failed

**Message value:** %1  
**Drive object:** B-INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside measuring range set in p4673.  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Remedy:**  
Re alarm value = 1:  
- check the output voltage of the analog sensor.  
Re alarm value = 2:  
- check the voltage setting for each encoder period (p4673).  
Re alarm value = 3:  
- check the range limit setting and increase it if necessary (p4676).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A31461 (N) Encoder 1: Analog sensor channel B failed

**Message value:** %1  
**Drive object:** B-INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:**  
The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside measuring range set in (p4675).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE
Faults and alarms

List of faults and alarms

**Remedy:**

Re alarm value = 1:
- check the output voltage of the analog sensor.
Re alarm value = 2:
- check the voltage setting for each encoder period (p4675).
Re alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE

**A31462 (N) Encoder 1: Analog sensor, no channel active**

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy:
- activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)

Reaction upon N: NONE
Acknowl. upon N: NONE

**A31463 (N) Encoder 1: Analog sensor position value exceeds limit value**

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy:
Re alarm value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
Re alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE

**A31470 (F, N) Encoder 1: Soiling detected**

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: In the case of the alternative encoder system interface on the Sensor Module Cabinet 30 (SMC30), encoder soiling is signaled via a 0 signal at terminal X521.7.
Remedy:
- check the plug connections
- replace the encoder or encoder cable

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE
Acknowl. upon N: NONE
F31500 (N, A)  Encoder 1: Position tracking traversing range exceeded

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is pre-set (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).
Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31501 (N, A)  Encoder 1: Position tracking encoder position outside tolerance window

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When powered down, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder.
Fault value (r0949, interpret decimal): Deviation (difference) to the last encoder position in increments of the absolute value.
The sign designates the traversing direction.
Note: The deviation (difference) found is also displayed in r0477.
See also: p0413 (Measuring gear, position tracking tolerance window), r0477 (Measuring gear, position difference)
Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).
See also: p0010

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31502 (N, A)  Encoder 1: Encoder with measuring gear, without valid signals

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF1 (OFF2)
Vector: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The encoder with measuring gear no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.

Reaction upon N: NONE
Acknowl. upon N: NONE
**Faults and alarms**

**List of faults and alarms**

---

**F31503 (N, A)**  
**Encoder 1: Position tracking cannot be reset**

- **Message value:**
  - 

- **Drive object:**
  - B_INF, ENC, VECTOR_G

- **Reaction:**
  - Infeed: OFF1 (NONE, OFF2)
  - Vector: OFF1 (NONE, OFF2, OFF3)

- **Acknowledge:**
  - IMMEDIATELY

- **Cause:**
  - The position tracking for the measuring gear cannot be reset.

- **Remedy:**
  - The fault should be resolved as follows:
    - select encoder commissioning (p0010 = 4).
    - reset the position tracking as follows (p0411.2 = 1).
    - de-select encoder commissioning (p0010 = 0).

  The fault should then be acknowledged and the absolute encoder adjusted.

---

**A31700**  
**Encoder 1: Effectivity test does not supply the expected value**

- **Message value:**
  - Fault cause: %1 bin

- **Drive object:**
  - B_INF, ENC, VECTOR_G

- **Reaction:**
  - NONE

- **Acknowledge:**
  - NONE

- **Cause:**
  - The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.

  Fault value (r0949, interpret binary):
  - Bit x = 1: Effectivity test x unsuccessful.

- **Remedy:**
  - Replace encoder.

---

**N31800 (F)**  
**Encoder 1: Group signal**

- **Message value:**
  - 

- **Drive object:**
  - B_INF, ENC, VECTOR_G

- **Reaction:**
  - Infeed: OFF2 (NONE)
  - Vector: ENCODER (IASC/DCBRAKE, NONE)

- **Acknowledge:**
  - NONE

- **Cause:**
  - The motor encoder has detected at least one fault.

  See also: p0491 (Motor encoder fault response ENCODER)

- **Remedy:**
  - Evaluate the other messages that are presently available.

---

**F31801 (N, A)**  
**Encoder 1 DRIVE-CLiQ: Sign-of-life missing**

- **Message value:**
  - Component number: %1, fault cause: %2

- **Drive object:**
  - B_INF, ENC, VECTOR_G

- **Reaction:**
  - Infeed: OFF2 (NONE)
  - Vector: ENCODER (IASC/DCBRAKE, NONE)

- **Acknowledge:**
  - IMMEDIATELY

- **Cause:**
  - A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.

  Fault cause:
  - 10 (= 0A hex):
    - The sign-of-life bit in the receive telegram is not set.

  Note regarding the message value:
  - The individual information is coded as follows in the message value (r0949/r2124):
    - 0000yyxx hex: yy = component number, xx = error cause

  See also: p0491 (Motor encoder fault response ENCODER)
**Remedy:**
- check the electrical cabinet design and cable routing for EMC compliance
- replace the component involved.

See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

---

**F31802 (N, A) Encoder 1: Time slice overflow**

**Message value:** %1
**Drive object:** B_INF, ENC, VECTOR_G
**Reaction:**
- Infeed: OFF2 (NONE)
- Vector: ENCODER (IASC/DCBRAKE, NONE)
**Acknowledge:** IMMEDIATELY
**Cause:** A time slice overflow has occurred in encoder 1.
Fault value (r0949, interpret hexadecimal):
- \( yx \) hex: \( y \) = function involved (Siemens-internal fault diagnostics), \( x \) = time slice involved
- \( x = 9 \):
  - Time slice overflow of the fast (current controller clock cycle) time slice.
- \( x = A \):
  - Time slice overflow of the average time slice.
- \( x = C \):
  - Time slice overflow of the slow time slice.
\( yx = 3E7 \):
  - Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).

**Remedy:**
- Increase the current controller sampling time

**Note:**
For a current controller sampling time = 31.25 μs, use an SMx20 with order number 6SL3055-0AA00-5xA3.

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

---

**F31804 (N, A) Encoder 1: Checksum error**

**Message value:** %1
**Drive object:** B_INF, ENC, VECTOR_G
**Reaction:**
- Infeed: OFF2 (NONE)
- Vector: ENCODER (IASC/DCBRAKE, NONE)
**Acknowledge:** POWER ON (IMMEDIATELY)
**Cause:** A checksum error has occurred when reading-out the program memory on the Sensor Module.
Fault value (r0949, interpret hexadecimal):
- yyyyxxxx hex
- yyyy: Memory area involved.
- xxxx: Difference between the checksum at POWER ON and the actual checksum.

See also: p0491 (Motor encoder fault response ENCODER)

**Remedy:**
- carry out a POWER ON (power off/on).
- upgrade firmware to later version (\( >= V2.6 \) HF3, \( >= V4.3 \) SP2, \( >= V4.4 \)).
- check whether the permissible ambient temperature for the component is maintained.
- replace the Sensor Module.

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE
**Faults and alarms**

**List of faults and alarms**

---

**F31805 (N, A) Encoder 1: EPROM checksum error**

- **Message value:** %1
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:**
  - Infeed: OFF2 (NONE)
  - Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** IMMEDIATELY
- **Cause:**
  - Internal parameter data is corrupted.
  - Fault value (r0949, interpret hexadecimal):
    - 01: EEPROM access error.
    - 02: Too many blocks in the EEPROM.
  - See also: p0491 (Motor encoder fault response ENCODER)
- **Remedy:** Replace the module.
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE

---

**F31806 (N, A) Encoder 1: Initialization error**

- **Message value:** %1
- **Drive object:** B_INF, ENC, VECTOR_G
- **Reaction:**
  - Infeed: OFF2 (NONE)
  - Vector: ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
  - The encoder was not successfully initialized.
  - Fault value (r0949, interpret hexadecimal):
    - Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).
    - Bit 2: Mid-voltage matching for track A unsuccessful.
    - Bit 3: Mid-voltage matching for track B unsuccessful.
    - Bit 4: Mid-voltage matching for acceleration input unsuccessful.
    - Bit 5: Mid-voltage matching for track safety A unsuccessful.
    - Bit 6: Mid-voltage matching for track safety B unsuccessful.
    - Bit 7: Mid-voltage matching for track C unsuccessful.
    - Bit 8: Mid-voltage matching for track D unsuccessful.
    - Bit 9: Mid-voltage matching for track R unsuccessful.
    - Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)
    - Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)
    - Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)
    - Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)
    - Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.5 V)
    - Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)
    - Bit 16: Internal fault - fault when reading a register (CAFE)
    - Bit 17: Internal fault - fault when writing a register (CAFE)
    - Bit 18: Internal fault: No mid-voltage matching available
    - Bit 19: Internal error - ADC access error.
    - Bit 20: Internal error - no zero crossover found.
    - Bit 21: Error while initializing the EnDat 2.2 measuring unit.
    - Bit 22: Error when reading out the data from the EnDat 2.2 measuring unit.
    - Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.
    - Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.
- **Note:**
  - Bit 0, 1: Up to 6SL3055-0AA00-5*A0
  - Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher
  - See also: p0491 (Motor encoder fault response ENCODER)
Remedy: Acknowledge fault.
If the fault cannot be acknowledged:
  Bits 2 ... 9: Check encoder power supply.
  Bits 2 ... 14: Check the corresponding cable.
  Bit 15 with no other bits: Check track R, check settings in p0404.
  Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.
  Bit 29 ... 31: Replace the defective measuring unit.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A31811 (F, N) Encoder 1: Encoder serial number changed

Message value: -
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The serial number of the motor encoder of a synchronous motor has changed. The change was only checked for encoders with serial number (e.g. EnDat encoders) and build-in motors (e.g. p0300 = 401) or third-party motors (p0300 = 2).
  Cause 1:
  - The encoder was replaced.
  Cause 2:
  - A third-party, built-in or linear motor was re-commissioned.
  Cause 3:
  - The motor with integrated and adjusted encoder was replaced.
  Cause 4:
  - The firmware was updated to a version that checks the encoder serial number.

Note:
With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).
When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).
Proceed as follows to hide serial number monitoring:
  - set the following serial numbers for the corresponding Encoder Data Set: p0441= FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.
  - parameterize F07414 as message type N (p2118, p2119).
See also: p0491 (Motor encoder fault response ENCODER)

Remedy: Re causes 1, 2:
  Carry out an automatic adjustment using the pole position identification routine. Acknowledge fault. Initiate the pole position identification routine with p1990 = 1. Then check that the pole position identification routine is correctly executed.
SERVO:
  If a pole position identification technique is selected in p1980, and if p0301 does not contain a motor type with an encoder adjusted in the factory, then p1990 is automatically activated.
  or
  Set the adjustment via p0431. In this case, the new serial number is automatically accepted.
  or
Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.
Re causes 3, 4:
  Accept the new serial number with p0440 = 1.

Reaction upon F: Infeed: OFF2 (NONE)
  Vector: NONE (ENCODER, OFF2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
F31812 (N, A) Encoder 1: Requested cycle or RX-TX timing not supported

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A cycle requested from the Control Unit or RX/TX timing is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.
Remedy: Carry out a POWER ON (power off/on) for all components.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31813 Encoder 1: Hardware logic unit failed

Message value: Fault cause: %1 bin
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: NONE
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause: The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):
Bit 0: ALU watchdog has responded.
Bit 1: ALU has detected a sign-of-life error.
Remedy: Replace encoder.

F31820 (N, A) Encoder 1 DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned.
Fault cause:
1 (= 01 hex): Checksum error (CRC error).
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex): The length of the receive telegram does not match the receive list.
5 (= 05 hex): The type of the receive telegram does not match the receive list.
6 (= 06 hex): The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex): The error bit in the receive telegram is set.
16 (= 10 hex): The receive telegram is too early.
F31835 (N, A)  Encoder 1 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex): The cyclic telegram has not been received.
34 (= 22 hex): Timeout in the telegram receive list.
64 (= 40 hex): Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31836 (N, A)  Encoder 1 DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex): Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
Carry out a POWER ON.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
List of faults and alarms

F31837 (N, A) Encoder 1 DRIVE-CLiQ: Component fault
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F31845 (N, A) Encoder 1 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
Carry out a POWER ON.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
### List of faults and alarms

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<tr>
<td>F31850 (N, A)</td>
<td>Encoder 1: Encoder evaluation, internal software error</td>
<td>%1</td>
<td>B_INF, ENC, VECTOR_G</td>
<td></td>
<td>POWER ON</td>
<td>An internal software error has occurred in the Sensor Module of encoder 1. Fault value (r0949, interpret decimal): 1: Background time slice is blocked. 2: Checksum over the code memory is not OK. 10000: OEM memory of the EnDat encoder contains data that cannot be interpreted. 11000 ... 11499: Descriptive data from EEPROM incorrect. 11500 ... 11699: Calibration data from EEPROM incorrect. 11900 ... 11999: Configuration data from EEPROM incorrect. 12000 ... 12008: Communication with AD converter faulted. 16000: DRIVE-CLiQ encoder initialization application error. 16001: DRIVE-CLiQ encoder initialization ALU error. 16002: DRIVE-CLiQ encoder HISI / SISI initialization error. 16003: DRIVE-CLiQ encoder safety initialization error. 16004: DRIVE-CLiQ encoder internal system error. See also: p0491 (Motor encoder fault response ENCODER)</td>
<td>- replace the Sensor Module. - if required, upgrade the firmware in the Sensor Module. - contact the Hotline.</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>F31851 (N, A)</td>
<td>Encoder 1 DRIVE-CLiQ (CU): Sign-of-life missing</td>
<td>Component number: %1, fault cause: %2</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>IMMEDIATELY</td>
<td></td>
<td>A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
<td>Upgrade the firmware of the component involved.</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>F31860 (N, A)</td>
<td>Encoder 1 DRIVE-CLiQ (CU): Telegram error</td>
<td>Component number: %1, fault cause: %2</td>
<td>B_INF, ENC, VECTOR_G</td>
<td>IMMEDIATELY</td>
<td></td>
<td>A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.</td>
<td></td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Fault cause:
1 (= 01 hex): Checksum error (CRC error).
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex): The length of the receive telegram does not match the receive list.
5 (= 05 hex): The type of the receive telegram does not match the receive list.
6 (= 06 hex): The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex): The error bit in the receive telegram is set.
16 (= 10 hex): The receive telegram is too early.
17 (= 11 hex): CRC error and the receive telegram is too early.
18 (= 12 hex): The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex): The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex): The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex): The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex): The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the DRIVE-CLiQ data transfer error shutdown threshold master

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31875 (N, A) Encoder 1 DRIVE-CLiQ (CU): Supply voltage failed

Message value: Component number: %1, fault cause: %2
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: OFF2
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause: 9 (= 09 hex): The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.
## List of faults and alarms

### F31885 (N, A) Encoder 1 DRIVE-CLiQ (CU): Cyclic data transfer error

<table>
<thead>
<tr>
<th>Message value</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td></td>
<td>Vector: ENCODER (IASC/DCBRAKE, NONE)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause</td>
<td>A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit. The nodes do not send and receive in synchronism. Fault cause: 26 (= 1A hex); Sign-of-life bit in the receive telegram not set and the receive telegram is too early. 33 (= 21 hex); The cyclic telegram has not been received. 34 (= 22 hex); Timeout in the telegram receive list. 64 (= 40 hex); Timeout in the telegram send list. 98 (= 62 hex); Error at the transition to cyclic operation. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
</tr>
<tr>
<td>Remedy</td>
<td>- check the power supply voltage of the component involved. - carry out a POWER ON. - replace the component involved. See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)</td>
</tr>
</tbody>
</table>

### F31886 (N, A) Encoder 1 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

<table>
<thead>
<tr>
<th>Message value</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>B_INF, ENC, VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>Infeed: NONE (OFF1, OFF2)</td>
</tr>
<tr>
<td></td>
<td>Vector: ENCODER (IASC/DCBRAKE, NONE)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause</td>
<td>A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit. Data were not able to be sent. Fault cause: 65 (= 41 hex); Telegram type does not match send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
</tr>
<tr>
<td>Remedy</td>
<td>- carry out a POWER ON. - check whether the firmware version of the encoder (r0148) matches the firmware version of Control Unit (r0018).</td>
</tr>
</tbody>
</table>
F31887 (N, A) Encoder 1 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2

Drive object: B_INF, ENC, VECTOR_G

Reaction: Infeed: NONE (OFF1, OFF2)
        Vector: ENCODER (IASC/DCBRAKE, NONE)

Acknowledge: IMMEDIATELY

Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 1). Faulty hardware cannot be excluded.
       Fault cause:
       32 (= 20 hex): Error in the telegram header.
       96 (= 60 hex): Response received too late during runtime measurement.
       97 (= 61 hex): Time taken to exchange characteristic data too long.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31895 (N, A) Encoder 1 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2

Drive object: B_INF, ENC, VECTOR_G

Reaction: Infeed: NONE (OFF1, OFF2)
        Vector: ENCODER (IASC/DCBRAKE, NONE)

Acknowledge: IMMEDIATELY

Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) involved to the Control Unit.
       Fault cause:
       11 (= 0B hex): Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### F31896 (N, A) Encoder 1 DRIVE-CLiQ (CU): Inconsistent component properties

**Message value:** Component number: %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:**  
- Infeed: NONE (OFF1, OFF2)  
- Vector: OFF2 (ENCODER, IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The properties of the DRIVE-CLiQ component (Sensor Module for encoder 1), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.  
**Fault value (r0949, interpret decimal):** Component number.  
**Remedy:**  
- carry out a POWER ON.  
- when a component is replaced, the same component type and if possible the same firmware version should be used.  
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F31899 (N, A) Encoder 1: Unknown fault

**Message value:** New message: %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:**  
- Infeed: OFF2 (NONE, OFF1)  
- Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** A fault occurred on the Sensor Module for encoder 1 that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit.  
**Fault value (r0949, interpret decimal):** Fault number.  
**Note:** If required, the significance of this new fault can be read about in a more recent description of the Control Unit. See also: p0491 (Motor encoder fault response ENCODER)  
**Remedy:**  
- replace the firmware on the Sensor Module by an older firmware version (r0148).  
- upgrade the firmware on the Control Unit (r0018).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### A31902 (F, N) Encoder 1: SPI-BUS error occurred

**Message value:** %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Error when operating the internal SPI bus.  
**Fault value (r0949, interpret hexadecimal):** Only for internal Siemens troubleshooting.  
**Remedy:**  
- replace the Sensor Module.  
- if required, upgrade the firmware in the Sensor Module.  
- contact the Hotline.  
**Reaction upon F:**  
- Infeed: NONE (OFF1, OFF2)  
- Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE
### A31903 (F, N) Encoder 1: I2C-BUS error occurred

**Message value:** %1  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Error when operating the internal I2C bus.  
**Remedy:**  
- replace the Sensor Module.  
- if required, upgrade the firmware in the Sensor Module.  
- contact the Hotline.  
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)  
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### F31905 (N, A) Encoder 1: Parameterization error

**Message value:** Parameter: %1, supplementary information: %2  
**Drive object:** B_INF, ENC, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A parameter of encoder 1 was detected as being incorrect. It is possible that the parameterized encoder type does not match the connected encoder. The parameter involved can be determined as follows:  
- determine the parameter number using the fault value (r0949).  
- determine the parameter index (p0187).  
**Fault value:** (r0949, interpret decimal):  
- yyyy = supplementary information, xxxx = parameter  
- xxxx = 421:  
  - For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.  
  - yyyy = 0:  
    - No information available.  
    - yyyy = 1:  
      - The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).  
    - yyyy = 2:  
      - A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.  
    - yyyy = 3:  
      - A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.  
    - yyyy = 4:  
      - This component does not support SSI encoders (p0404.9 = 1) without track A/B.  
    - yyyy = 5:  
      - For SQW encoder, value in p4686 greater than in p0425.  
    - yyyy = 6:  
      - DRIVE-CLIQ encoder cannot be used with this firmware version.  
    - yyyy = 7:  
      - For an SQW encoder, the Xact1 correction (p0437.2) is only permitted with equidistant zero marks.  
    - yyyy = 8:  
      - The motor pole pair width is not supported by the linear scale being used.  
    - yyyy = 9:  
      - The length of the position in the EnDat protocol may be a maximum of 32 bits.  
    - yyyy = 10:  
      - The connected encoder is not supported.  
See also: p0491 (Motor encoder fault response ENCODER)
Remedy:
- check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- re parameter number = 314:
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "measuring gear ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31912 Encoder 1: Device combination is not permissible

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: Infeed: ENCODER (NONE)
Vector: ENCODER (IASC/DCBRAKE, NONE)
Acknowledge: PULSE INHIBIT
Cause:
The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003: The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of $2^n$.
1005: The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006: The maximum duration (31.25 µs) of the EnDat transfer was exceeded.
2001: The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.
2002: The resolution of the linear measuring unit does not match the pole pair width of the linear motor

Remedy:
Re fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- Set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A31915 (F, N) Encoder 1: Configuration error

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The configuration for encoder 1 is incorrect.
Alarm value (r2124, interpret decimal):
1: Re-parameterization between fault/alarm is not permissible.
419: When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.

Remedy:
Re alarm value = 1:
No re-parameterization between fault/alarm.
Re alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### F31916 (N, A)  Encoder 1: Parameterization fault

| Message value: | Parameter: %1, supplementary information: %2 |
| Drive object:  | B_INF, VECTOR_G |
| Reaction:      | Infeed: OFF2 (NONE, OFF1)  
                 Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2) |
| Acknowledge:   | IMMEDIATELY |
| Cause:         | A parameter of encoder 1 was detected as being incorrect.  
                   It is possible that the parameterized encoder type does not match the connected encoder.  
                   The parameter involved can be determined as follows:  
                   - determine the parameter number using the fault value (r0949).  
                   - determine the parameter index (p0187).  
                   Fault value (r0949, interpret decimal):  
                   Parameter number.  
                   Note:  
                   This fault is only output for encoders where r0404.10 = 1 or r0404.11 = 1. It corresponds to A31905 with encoders  
                   where r0404.10 = 0 and r0404.11 = 0.  
                   See also: p0491 (Motor encoder fault response ENCODER) |
| Remedy:        | - check whether the connected encoder type matches the encoder that has been parameterized.  
                   - correct the parameter specified by the fault value (r0949) and p0187. |
| Reaction upon N: | NONE |
| Acknowledge upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowledge upon A: | NONE |

### F31916 (N, A)  Encoder 1: Parameterization fault

| Message value: | Parameter: %1, supplementary information: %2 |
| Drive object:  | ENC |
| Reaction:      | Infeed: OFF2 (NONE, OFF1)  
                 Vector: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2) |
| Acknowledge:   | IMMEDIATELY |
| Cause:         | A parameter of encoder 1 was detected as being incorrect.  
                   In the case of the ENCODER drive object, the selected encoder type (rotary/linear) might not match the function module setting (r0108.12).  
                   The parameter involved can be determined as follows:  
                   - determine the parameter number using the fault value (r0949).  
                   - determine the parameter index (p0187).  
                   Fault value (r0949, interpret decimal):  
                   Parameter number.  
                   Note:  
                   See also: p0491 (Motor encoder fault response ENCODER) |
| Remedy:        | - check whether the connected encoder type matches the encoder that has been parameterized.  
                   - correct the parameter specified by the fault value (r0949) and p0187.  
                   - if a linear encoder has been selected in parameter p0400/p0404, the "linear encoder" function module has to be activated (r0108.12 = 1)  
                   - if a rotary encoder has been selected in parameter p0400/p0404, the "linear encoder" function module should not be activated (r0108.12 = 0) |
| Reaction upon N: | NONE |
| Acknowledge upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowledge upon A: | NONE |

### A31920 (F, N)  Encoder 1: Temperature sensor fault

| Message value: | Fault cause: %1, channel number: %2 |
| Drive object:  | B_INF, ENC, VECTOR_G |
| Reaction:      | NONE |
| Acknowledge:   | NONE |
| Cause:         | When evaluating the temperature sensor, an error occurred. |
Fault cause:
1 (= 01 hex):
Wire breakage or sensor not connected (KTY: R > 1630 Ohm).
2 (= 02 hex):
Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).

Additional values:
Only for internal Siemens troubleshooting.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = channel number, xx = error cause
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A31930 (N) Encoder 1: Data logger has saved data

Message value: 

Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.
The diagnostics data is saved in the following folder:
/USER/SINAMICS/DATA/SMTRC00.BIN
...
/USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).
Note: Only Siemens can evaluate the BIN files.

Remedy:
Not necessary.
The alarm disappears automatically.
The data logger is ready to record the next fault case.

Reaction upon N: NONE
Acknowl. upon N: NONE

A31940 (F, N) Encoder 1: Spindle sensor S1 voltage incorrect

Message value: %1

Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: The voltage of analog sensor S1 is outside the permissible range.
Fault value (r0949, interpret decimal):
Signal level from sensor S1.
Note: A signal level of 500 mV corresponds to the numerical value 500 dec.

Remedy:
- Check the clamped tool.
- Check the tolerance and if required, adapt (p5040).
- Check the thresholds and if required, adapt (p5041).
- Check analog sensor S1 and connections.
Faults and alarms

List of faults and alarms

F31950 Encoder 1: Internal software error

Message value: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: ENCODER (OFF2)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- If necessary, upgrade the firmware in the Sensor Module to a later version.
- contact the Hotline.

A31999 (F, N) Encoder 1: Unknown alarm

Message value: New message: %1
Drive object: B_INF, ENC, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A alarm has occurred on the Sensor Module for encoder 1 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm number.
Alarm value (r2124, interpret decimal):
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).

F32100 (N, A) Encoder 2: Zero mark distance error

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that
if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the
system.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- replace the encoder or encoder cable.
### Encoder 2: Zero mark failed

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)

**Acknowledge:** PULSE INHIBIT

**Cause:** The 1.5 x parameterized zero mark distance was exceeded. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal): Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections.
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- when p0437.1 is active, check p4686.
- replace the encoder or encoder cable.

### Encoder 2: Amplitude error, track R

**Message value:** R track: %1

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** The amplitude of the reference track signal (track R) does not lie within the tolerance bandwidth for encoder 2. The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot. Fault value (r0949, interpret hexadecimal):

- yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)
  - The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV.
  - The response threshold for the differential signal level of the encoder is < -1600 mV.
  - A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

**Note:**
- The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.
- The fault value can only be represented between -32767 ... 32767 dec (-770 ... 770 mV).
- The signal level is not evaluated unless the following conditions are satisfied:
  - Sensor Module properties available (r0459.31 = 1).
  - Monitoring active (p0437.31 = 1).

**Remedy:**
- check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections and contacts of the encoder cable.
- check whether the zero mark is connected and the signal cables RP and RN have been connected correctly.
- replace the encoder cable.
- if the coding disk is soiled or the lighting aged, replace the encoder.
### F32110 (N, A) Encoder 2: Serial communications error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause:</td>
<td>Serial communication protocol transfer error between the encoder and evaluation module.</td>
</tr>
</tbody>
</table>

Fault value (r0949, interpret binary):
- Bit 0: Alarm bit in the position protocol.
- Bit 1: Incorrect quiescent level on the data line.
- Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
- Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
- Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.
- Bit 5: Internal error in the serial driver: An illegal mode command was requested.
- Bit 6: Timeout when cyclically reading.
- Bit 7: Timeout for the register communication.
- Bit 8: Protocol is too long (e.g. > 64 bits).
- Bit 9: Receive buffer overflow.
- Bit 10: Frame error when reading twice.
- Bit 11: Parity error.
- Bit 12: Data line signal level error during the monoflop time.
- Bit 13: Data line incorrect.
- Bit 14: Fault for the register communication.

**Remedy:**

- **Re fault value, bit 0 = 1:**
  - Enc defect F31111 may provide additional details.
- **Re fault value, bit 1 = 1:**
  - Incorrect encoder type / replace the encoder or encoder cable.
- **Re fault value, bit 2 = 1:**
  - Incorrect encoder type / replace the encoder or encoder cable.
- **Re fault value, bit 3 = 1:**
  - EMC / connect the cable shield, replace the encoder or encoder cable.
- **Re fault value, bit 4 = 1:**
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- **Re fault value, bit 5 = 1:**
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- **Re fault value, bit 6 = 1:**
  - Update Sensor Module firmware.
- **Re fault value, bit 7 = 1:**
  - Incorrect encoder type / replace the encoder or encoder cable.
- **Re fault value, bit 8 = 1:**
  - Check parameterization (p0429.2).
- **Re fault value, bit 9 = 1:**
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- **Re fault value, bit 10 = 1:**
  - Check parameterization (p0429.2, p0449).
- **Re fault value, bit 11 = 1:**
  - Check parameterization (p0436).
- **Re fault value, bit 12 = 1:**
  - Check parameterization (p0429.6).
- **Re fault value, bit 13 = 1:**
  - Check data line.
- **Re fault value, bit 14 = 1:**
  - Incorrect encoder type / replace the encoder or encoder cable.

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE
F32111 (N, A) Encoder 2: Absolute encoder internal fault

Message value: Fault cause: %1 bin, additional information: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The absolute encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
Bit 0: Lighting system failed.
Bit 1: Signal amplitude too low.
Bit 2: Position value incorrect.
Bit 3: Encoder power supply overvoltage condition.
Bit 4: Encoder power supply undervoltage condition.
Bit 5: Encoder power supply overcurrent condition.
Bit 6: The battery must be changed.
yyyy = 1:
Bit 0: Signal amplitude outside the control range.
Bit 1: Error multiturn interface
Bit 2: Internal data error (singleturn/multiturn not with single steps).
Bit 3: Error EEPROM interface.
Bit 4: SAR converter error.
Bit 5: Fault for the register data transfer.
Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.

Remedy: For yyyy = 0:
Re fault value, bit 0 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
Re fault value, bit 1 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
Re fault value, bit 2 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
Re fault value, bit 3 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When a motor encoder with a direct DRIVE-CLiQ connection is used: Replace the motor.
Re fault value, bit 4 = 1:
5 V power supply voltage fault.
When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
When using a motor with DRIVE-CLiQ: Replace the motor.
Re fault value, bit 5 = 1:
Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
Re fault value, bit 6 = 1:
The battery must be changed (only for encoders with battery back-up).
For yyyy = 1:
Encoder is defective. Replace encoder.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
**Faults and alarms**

**List of faults and alarms**

---

**F32115 (N, A)**  
**Encoder 2: Amplitude error track A or B (A^2 + B^2)**

- **Message value:** A track: %1, B-track: %2  
- **Drive object:** VECTOR_G  
- **Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
- **Acknowledge:** PULSE INHIBIT  
- **Cause:** The amplitude (root of A^2 + B^2) for encoder 2 exceeds the permissible tolerance.  
- **Fault value (r0949, interpret hexadecimal):**  
  - yyyyxxx hex:  
  - yyyy = Signal level, track B (16 bits with sign).  
  - xxxx = Signal level, track A (16 bits with sign).  
  - The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).  
  - The response thresholds are < 170 mV (observe the frequency response of the encoder) and > 750 mV.  
  - A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.  
  - The nominal signal level is at 2900 mV (2.0 Vrms). The response thresholds are < 1070 mV and > 3582 mV.  
  - A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.  
  - Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.  
- **Remedy:**  
  - check that the encoder cables and shielding are routed in compliance with EMC.  
  - check the plug connections  
  - replace the encoder or encoder cable  
  - check the Sensor Module (e.g. contacts).  
  - adjust the scanning head and check the bearing system of the measuring wheel.  
  - The following applies for measuring systems with their own bearing system:  
  - ensure that the encoder housing is not subject to any axial force.  

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

---

**F32116 (N, A)**  
**Encoder 2: Amplitude error monitoring track A + B**

- **Message value:** A track: %1, B-track: %2  
- **Drive object:** VECTOR_G  
- **Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
- **Acknowledge:** IMMEDIATELY  
- **Cause:** The amplitude of the rectified encoder signals A and B and the amplitude from the roots of A^2 + B^2 for encoder 2 are not within the tolerance bandwidth.  
- **Fault value (r0949, interpret hexadecimal):**  
  - yyyyxxx hex:  
  - yyyy = Signal level, track B (16 bits with sign).  
  - xxxx = Signal level, track A (16 bits with sign).  
  - The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).  
  - The response thresholds are < 130 mV (observe the frequency response of the encoder) and > 955 mV.  
  - A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.  
  - Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.  
- **Remedy:**  
  - check that the encoder cables and shielding are routed in compliance with EMC.  
  - check the plug connections  
  - replace the encoder or encoder cable  
  - check the Sensor Module (e.g. contacts).  

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE
F32117 (N, A)  Encoder 2: Inversion error signals A/B/R

Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 … 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), CUA32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.
Remedy:
- Check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?
Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), the following applies:
- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CUA32, CU310):
- pin 10 (reference signal R) <--> pin 7 (encoder power supply, ground)
- pin 11 (reference signal R inverted) <--> pin 4 (encoder power supply)

F32118 (N, A)  Encoder 2: Speed difference outside the tolerance range

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: For an HTL/TTL encoder, the speed difference has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0492
Remedy:
- check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

F32120 (N, A)  Encoder 2: Power supply voltage fault

Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: A power supply fault was detected for encoder 2.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Faults and alarms

List of faults and alarms

- Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
- Bit 4: The 24 V power supply through the Power Module (PM) is overloaded.
- Bit 5: Overcurrent at the EnDat connection of the converter.
- Bit 6: Overvoltage at the EnDat connection of the converter.
- Bit 7: Hardware fault at the EnDat connection of the converter.

Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.

Remedy:
- Re fault value, bit 0 = 1:
  - correct encoder cable connected?
  - check the plug connections of the encoder cable.
  - SMC30: Check the parameterization (p0404.22).
- Re fault value, bit 1 = 1:
  - correct encoder cable connected?
  - replace the encoder or encoder cable
- Re fault value, bit 2 = 1:
  - correct encoder cable connected?
  - replace the encoder or encoder cable
- Re fault value, bit 3 = 1:
  - correct encoder cable connected?
  - replace the encoder or encoder cable
- Re fault value, bit 5 = 1:
  - Measuring unit correctly connected at the converter?
  - Replace the measuring unit or the cable to the measuring unit.
- Re fault value, bit 6, 7 = 1:
  - Replace the defective EnDat 2.2 converter.

F32121 (N, A) Encoder 2: Coarse position error

- Message value: -
- Drive object: VECTOR_G
- Reaction: OFF1 (NONE, OFF2, OFF3)
- Acknowledge: PULSE INHIBIT
- Cause: For the actual value sensing, an error was detected on the module.
  As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.
- Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F32122 Encoder 2: Internal power supply voltage faulty

- Message value: %1
- Drive object: VECTOR_G
- Reaction: ENCODER
- Acknowledge: IMMEDIATELY
- Cause: Fault in internal reference voltage of ASICs for encoder 2.
  Fault value (r0949, interpret decimal):
  1: Reference voltage error.
  2: Internal undervoltage.
  3: Internal overvoltage.
- Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.
### F32123 (N, A) Encoder 2: Signal level A/B unipolar outside tolerance

**Message value:** Fault cause: %1 bin  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:**  
- The unipolar level (AP/AN or BP/BN) for encoder 2 is outside the permissible tolerance.  
- Fault value (r0949, interpret binary):  
  - Bit 0 = 1: Either AP or AN outside the tolerance.  
  - Bit 16 = 1: Either BP or BN outside the tolerance.  
- The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.  
- The response thresholds are < 1700 mV and > 3300 mV.  
**Note:**  
- The signal level is not evaluated unless the following conditions are satisfied:  
  - Sensor Module properties available (r0459.31 = 1).  
  - Monitoring active (p0437.31 = 1).  
**Remedy:**  
- make sure that the encoder cables and shielding are installed in an EMC-compliant manner.  
- check the plug connections and contacts of the encoder cable.  
- check the short-circuit of a signal cable with mass or the operating voltage.  
- replace the encoder cable.  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F32125 (N, A) Encoder 2: Amplitude error track A or B overcontrolled

**Message value:** A track: %1, B-track: %2  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** PULSE INHIBIT  
**Cause:**  
- The amplitude of track A or B for encoder 2 exceeds the permissible tolerance band.  
- Fault value (r0949, interpret hexadecimal):  
  - yyyyxxxx hex:  
    - yyyy = Signal level, track B (16 bits with sign).  
    - xxxx = Signal level, track A (16 bits with sign).  
- The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).  
- The response threshold is > 750 mV. This fault also occurs if the A/D converter is overcontrolled.  
- A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.  
- Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.  
**Remedy:**  
- check that the encoder cables and shielding are routed in compliance with EMC.  
- replace the encoder or encoder cable  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F32126 (N, A) Encoder 2: Amplitude AB too high

**Message value:** Amplitude: %1, Angle: %2  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** PULSE INHIBIT  
**Cause:**  
- The amplitude (root of A^2 + B^2 or |A| + |B|) for encoder 2 exceeds the permissible tolerance.
Faults and alarms

List of faults and alarms

Fault value (r0949, interpret hexadecimal):

\[
\text{yyyyyyyy hex:}
\]

\[
\text{yyyy = Angle}
\]

\[
\text{xxxx = Amplitude, i.e. root from } A^2 + B^2 (16 \text{ bits without sign})
\]

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).

The response threshold for \(|A| + |B|\) is > 1120 mV or the root of \((A^2 + B^2) > 955 \text{ mV.}\)

A signal level of 500 mV peak value corresponds to the numerical value of \(299A\) hex = 10650 dec.

The angle 0 \(\ldots\) FFFF hex corresponds to 0 \(\ldots\) 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32129 (N, A) Encoder 2: Position difference, hall sensor/track C/D and A/B too large

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A32429.

Fault value (r0949, interpret decimal):

For track C/D, the following applies:

Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).

For Hall signals, the following applies:

Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy:
- track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32130 (N, A) Encoder 2: Zero mark and position error from the coarse synchronization

Message value: Angular deviation, electrical: %1, angle, mechanical: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.

When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.

When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.
Fault value (r0949, interpret hexadecimal):

\[ \text{yyyyxxxx hex} \]

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- if the Hall sensor is used as an equivalent for track C/D, check the connection.
- Check the connection of track C or D.
- replace the encoder or encoder cable

**Cause:**
Absolute encoder:
When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.

Limit value for the deviation:
- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- other encoders: 15 pulses = 60 quadrants.

Incremental encoder:
When the zero pulse is passed, a deviation in the incremental position was detected.

For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have \( n \) times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Fault value (r0949, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check whether the coding disk is dirty or there are strong ambient magnetic fields.
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).

**Fault value (r0949, interpret binary):**

- Bit 0: F1 (safety status display)
- Bit 1: F2 (safety status display)
List of faults and alarms

Bit 2: Lighting (reserved)
Bit 3: Signal amplitude (reserved)
Bit 4: Position value (reserved)
Bit 5: Overvoltage (reserved)
Bit 6: Undervoltage (reserved)
Bit 7: Overcurrent (reserved)
Bit 8: Battery (reserved)
Bit 16: Lighting (→ F3x135, x = 1, 2, 3)
Bit 17: Signal amplitude (→ F3x135, x = 1, 2, 3)
Bit 18: Singleturn position 1 (→ F3x135, x = 1, 2, 3)
Bit 19: Overvoltage (→ F3x135, x = 1, 2, 3)
Bit 20: Undervoltage (→ F3x135, x = 1, 2, 3)
Bit 21: Overcurrent (→ F3x135, x = 1, 2, 3)
Bit 22: Temperature exceeded (→ F3x405, x = 1, 2, 3)
Bit 23: Singleturn position 2 (safety status display)
Bit 24: Singleturn system (→ F3x135, x = 1, 2, 3)
Bit 25: Singleturn power down (→ F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (→ F3x136, x = 1, 2, 3)
Bit 27: Multiturn position 2 (→ F3x136, x = 1, 2, 3)
Bit 28: Multiturn system (→ F3x136, x = 1, 2, 3)
Bit 29: Multiturn power down (→ F3x136, x = 1, 2, 3)
Bit 30: Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)
Bit 31: Multiturn battery (reserved)

Remedy:
Replace DRIVE-CLiQ encoder.

**F32136**

**Encoder 2: Error when determining multiturn information**

**Message value:** Fault cause: %1 bin

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:** PULSE INHIBIT

**Cause:**
The DRIVE-CLiQ encoder supplies status information via bits in an internal status/fault word. Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display)
Bit 1: F2 (safety status display)
Bit 2: Lighting (reserved)
Bit 3: Signal amplitude (reserved)
Bit 4: Position value (reserved)
Bit 5: Overvoltage (reserved)
Bit 6: Undervoltage (reserved)
Bit 7: Overcurrent (reserved)
Bit 8: Battery (reserved)
Bit 16: Lighting (→ F3x135, x = 1, 2, 3)
Bit 17: Signal amplitude (→ F3x135, x = 1, 2, 3)
Bit 18: Singleturn position 1 (→ F3x135, x = 1, 2, 3)
Bit 19: Overvoltage (→ F3x135, x = 1, 2, 3)
Bit 20: Undervoltage (→ F3x135, x = 1, 2, 3)
Bit 21: Overcurrent (→ F3x135, x = 1, 2, 3)
Bit 22: Temperature exceeded (→ F3x405, x = 1, 2, 3)
Bit 23: Singleturn position 2 (safety status display)
Bit 24: Singleturn system (→ F3x135, x = 1, 2, 3)
Bit 25: Singleturn power down (→ F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (→ F3x136, x = 1, 2, 3)
Bit 27: Multiturn position 2 (→ F3x136, x = 1, 2, 3)
Bit 28: Multiturn system (→ F3x136, x = 1, 2, 3)
Bit 29: Multiturn power down (→ F3x136, x = 1, 2, 3)
Bit 30: Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)
Bit 31: Multiturn battery (reserved)

Remedy:
Replace DRIVE-CLiQ encoder.
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F32137</td>
<td>Encoder 2: Internal fault when determining the position</td>
<td>Fault cause: %1 bin</td>
<td>VECTOR_G</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
<td>PULSE INHIBIT</td>
<td>The DRIVE-CLiQ encoder fault word supplies fault bits that have been set. Fault value (r0949, interpret binary): Only for internal Siemens troubleshooting.</td>
<td>Replace encoder.</td>
</tr>
<tr>
<td>F32138</td>
<td>Encoder 2: Internal error when determining multiturn information</td>
<td>Fault cause: %1 bin</td>
<td>VECTOR_G</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
<td>PULSE INHIBIT</td>
<td>The DRIVE-CLiQ encoder fault word supplies fault bits that have been set. Fault value (r0949, interpret binary): Only for internal SIEMENS troubleshooting.</td>
<td>Replace encoder.</td>
</tr>
<tr>
<td>F32150</td>
<td>Encoder 2: Initialization error</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)</td>
<td>PULSE INHIBIT</td>
<td>Encoder functionality selected in p0404 is not operating correctly. Fault value (r0949, interpret hexadecimal): Encoder malfunction. The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).</td>
<td>- Check that p0404 is correctly set. - check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable. - if relevant, note additional fault messages that describe the fault in detail.</td>
</tr>
<tr>
<td>F32151</td>
<td>Encoder 2: Encoder speed for initialization AB too high</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
<td>PULSE INHIBIT</td>
<td>The encoder speed is too high during while initializing the sensor.</td>
<td>Reduce the speed of the encoder accordingly during initialization. If necessary, de-activate monitoring (p0437.29). See also: p0437 (Sensor Module configuration extended)</td>
</tr>
</tbody>
</table>

Note: Only for internal Siemens troubleshooting.
### F32152 (N, A) Encoder 2: Maximum input frequency exceeded

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The maximum input frequency of the encoder evaluation has been exceeded.  
Fault value (r0949, interpret decimal):  
Actual input frequency in Hz.  
See also: p0408 (Rotary encoder pulse No.)  
**Remedy:**  
- Reduce the speed.  
- Use an encoder with a lower pulse number (p0408).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F32160 (N, A) Encoder 2: Analog sensor channel A failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** ENCODER (IASC/DCBRAKE, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Fault value (r0949, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4673).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Remedy:**  
For fault value = 1:  
- check the output voltage of the analog sensor.  
For fault value = 2:  
- check the voltage setting for each encoder period (p4673).  
For fault value = 3:  
- check the range limit setting and increase it if necessary (p4676).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F32161 (N, A) Encoder 2: Analog sensor channel B failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** ENCODER (IASC/DCBRAKE, NONE)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Fault value (r0949, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4675).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Remedy:**  
For fault value = 1:  
- check the output voltage of the analog sensor.  
For fault value = 2:  
- check the voltage setting for each encoder period (p4675).  
For fault value = 3:  
- check the range limit setting and increase it if necessary (p4676).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE
**F32163 (N, A) Encoder 2: Analog sensor position value exceeds limit value**

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** ENCODER (IASC/DCBRAKE, NONE)

**Acknowledge:** PULSE INHIBIT

**Cause:**
- The position value has exceeded the permissible range of -0.5 ... +0.5.
- Fault value (r0949, interpret decimal):
  1: Position value from the LVDT sensor.
  2: Position value from the encoder characteristic.

**Remedy:**
- For fault value = 1:
  - Check the LVDT ratio (p4678).
  - Check the reference signal connection at track B.
- For fault value = 2:
  - Check the coefficients of the characteristic (p4663 ... p4666).

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

---

**A32400 (F, N) Encoder 2: Alarm threshold zero mark distance error**

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
- The measured zero mark distance does not correspond to the parameterized zero mark distance.
- For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system.
- The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
- Alarm value (r2124, interpret decimal):
  - Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
  - The sign designates the direction of motion when detecting the zero mark distance.

**Remedy:**
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the distance between zero marks (p0424, p0425).
- Replace the encoder or encoder cable.

**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

**Acknowl. upon F:** IMMEDIATELY

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

---

**A32401 (F, N) Encoder 2: Alarm threshold zero mark failed**

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
- The 1.5 x parameterized zero mark distance was exceeded.
- The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder).
- Alarm value (r2124, interpret decimal):
  - Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).

**Remedy:**
- Check that the encoder cables are routed in compliance with EMC.
- Check the plug connections.
- Check the encoder type (encoder with equidistant zero marks).
- Adapt the parameter for the clearance between zero marks (p0425).
- Replace the encoder or encoder cable.
List of faults and alarms

F32405 (N, A)  Encoder 2: Temperature in the encoder evaluation inadmissible
Message value:  %1
Drive object:  VECTOR_G
Reaction:  ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge:  IMMEDIATELY
Cause:  The encoder evaluation for a motor with DRIVE-CLiQ has detected an inadmissible temperature.
The fault threshold is 125 °C.
Alarm value (r2124, interpret decimal):
Measured board/module temperature in 0.1 °C.
Remedy:  Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.
Reaction upon N:  NONE
Acknowl. upon N:  NONE
Reaction upon A:  NONE
Acknowl. upon A:  NONE

A32407 (F, N)  Encoder 2: Function limit reached
Message value:  %1
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The encoder has reached one of its function limits. A service is recommended.
Alarm value (r2124, interpret decimal):
1 : Incremental signals
3 : Absolute track
4 : Code connection
Remedy:  Perform service. Replace the encoder if necessary.
Note:  The actual functional reserve of an encoder can be displayed via r4651.
See also:  p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)
Reaction upon F:  NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F:  IMMEDIATELY
Reaction upon N:  NONE
Acknowl. upon N:  NONE

A32410 (F, N)  Encoder 2: Serial communications
Message value:  Fault cause: %1 bin
Drive object:  VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoplot time.

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.

**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
**Acknowl. upon F:** IMMEDIATELY
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

**A32411 (F, N)**  
**Encoder 2: Absolute encoder signals internal alarms**

**Message value:** Fault cause: %1 bin, additional information: %2
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** The absolute encoder fault word includes alarm bits that have been set. Alarm value (r2124, interpret binary):
- yyyy = supplementary information, xxxx = fault cause
- yyyy = 0:
  - Bit 0: Frequency exceeded (speed too high).
  - Bit 1: Temperature exceeded.
  - Bit 2: Control reserve, lighting system exceeded.
  - Bit 3: Battery discharged.
  - Bit 4: Reference point passed.
- yyyy = 1:
  - Bit 0: Signal amplitude outside the control range.
  - Bit 1: Error multiturn interface
  - Bit 2: Internal data error (singleturn/multiturn not with single steps).
  - Bit 3: Error EEPROM interface.
  - Bit 4: SAR converter error.
  - Bit 5: Fault for the register data transfer.
  - Bit 6: Internal error identified at the error pin (nErr).
  - Bit 7: Temperature threshold exceeded or fallen below.

**Remedy:** Replace encoder.
**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
**Acknowl. upon F:** IMMEDIATELY
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

**A32412 (F, N)**  
**Encoder 2: Error bit set in the serial protocol**

**Message value:** %1
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE

**Cause:** The encoder sends a set error bit via the serial protocol. Alarm value (r2124, interpret binary):
- Bit 0: Fault bit in the position protocol.
- Bit 1: Alarm bit in the position protocol.

**Remedy:**
- carry out a POWER ON (power off/on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.

**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
**Acknowl. upon F:** IMMEDIATELY
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
Faults and alarms

List of faults and alarms

A32414 (F, N) Encoder 2: Amplitude error track C or D (C^2 + D^2)
Message value: C track: %1, D track: %2
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The amplitude (C^2 + D^2) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Signal level, track D (16 bits with sign).
xxxx = Signal level, track C (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note: If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.
Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32415 (F, N) Encoder 2: Amplitude alarm track A or B (A^2 + B^2)
Message value: Amplitude: %1, Angle: %2
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The amplitude (root of A^2 + B^2) for encoder 2 exceeds the permissible tolerance.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex:
yyyy = Angle
xxxx = Amplitude, i.e. root from A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is < 230 mV (observe the frequency response of the encoder).
A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note for sensors modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).
A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.
Note: The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy:
- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- if the coding disk is soiled or the lighting aged, replace the encoder.

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
A32418 (F, N) Encoder 2: Speed difference per sampling rate exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: For an HTL/TTL encoder, the speed difference between two sampling cycles has exceeded the value in p0492. The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting. See also: p0492
Remedy: - check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the setting of p0492.
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknow. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknow. upon N: NONE

A32419 (F, N) Encoder 2: Track A or B outside tolerance
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The amplitude/phase/offset correction for track A or B is at the limit. Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27 Phase: <84 degrees or >96 degrees SMC20: Offset correction: +/-140 mV SMC10: Offset correction: +/-650 mV Alarm value (r2124, interpret hexadecimal): xxx1: Minimum of the offset correction, track B xxx2: Maximum of the offset correction, track B xxx1x: Minimum of the offset correction, track A xxx2x: Maximum of the offset correction, track A xx1xx: Minimum of the amplitude correction, track B/A xx2xx: Maximum of the amplitude correction, track B/A x1xxx: Minimum of the phase error correction x2xxx: Maximum of the phase error correction 1xxxx: Minimum of the cubic correction 2xxxx: Maximum of the cubic correction
Remedy: - check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).
- check the plug connections (also the transition resistance).
- check the encoder signals.
- replace the encoder or encoder cable
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknow. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknow. upon N: NONE

A32421 (F, N) Encoder 2: Coarse position error
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: For the actual value sensing, an error was detected. As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.
Faults and alarms

List of faults and alarms

Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy:
- Re alarm value = 3:
  - For a standard encoder with cable, contact the manufacturer where relevant.
  - correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32422 (F, N) Encoder 2: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance.
This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.
The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).
Alarm value (r2124, interpret decimal):
accumulated differential pulses in encoder pulses.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32429 (F, N) Encoder 2: Position difference, hall sensor/track C/D and A/B too large

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.
Alarm value (r2124, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy:
- track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
List of faults and alarms

Faults and alarms

Reaction upon N: NONE
Acknowl. upon N: NONE

A32431 (F, N) Encoder 2: Deviation, position incremental/absolute too large
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When the zero pulse is passed, a deviation in the incremental position was detected.
For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have
  n times the distance referred to the first zero mark.
For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have
  the expected distance to the first zero mark pair.
Alarm value (r2124, interpret decimal):
Deviation in quadrants (1 pulse = 4 quadrants).
Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- Clean coding disk or remove strong magnetic fields.
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32432 (F, N) Encoder 2: Rotor position adaptation corrects deviation
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: For track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected.
Alarm value (r2124, interpret decimal):
Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check encoder limit frequency.
- adapt the parameter for the distance between zero marks (p0424, p0425).
Reaction upon F: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32442 (F, N) Encoder 2: Battery voltage pre-alarm
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer
  sufficient to check the multiturn information.
Remedy: Replace battery.
Reaction upon F: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### A32443 (F, N) Encoder 2: Unipolar CD signal level outside specification

**Message value:** Fault cause: %1 bin  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE

**Cause:** The unipolar level (CP/CN or DP/DN) for encoder 2 is outside the permissible tolerance.  
Alarm value (r2124, interpret binary):  
- Bit 0 = 1: Either CP or CN outside the tolerance.  
- Bit 16 = 1: Either DP or DN outside the tolerance.  
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV.  
The response thresholds are < 1700 mV and > 3300 mV.  
**Note:**  
The signal level is not evaluated unless the following conditions are satisfied:  
- Sensor Module properties available (r0459.31 = 1).  
- Monitoring active (p0437.31 = 1).

**Remedy:**  
- check that the encoder cables and shielding are routed in compliance with EMC.  
- check the plug connections and contacts of the encoder cable.  
- are the C/D tracks connected correctly (have the signal lines CP and CN or DP and DN been interchanged)?  
- replace the encoder cable.

**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A32460 (N) Encoder 2: Analog sensor channel A failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE

**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside measuring range set in p4673.  
3: The absolute value of the input voltage has exceeded the range limit (p4676).

**Remedy:**  
- Re alarm value = 1:  
  - check the output voltage of the analog sensor.  
- Re alarm value = 2:  
  - check the voltage setting for each encoder period (p4673).  
- Re alarm value = 3:  
  - check the range limit setting and increase it if necessary (p4676).

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A32461 (N) Encoder 2: Analog sensor channel B failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE

**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4675).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).

**Remedy:**  
- Re alarm value = 1:  
  - check the output voltage of the analog sensor.  
- Re alarm value = 2:  
  - check the voltage setting for each encoder period (p4675).
List of faults and alarms

Re alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).

Reaction upon N: NONE
Acknowl. upon N: NONE

A32462 (N) Encoder 2: Analog sensor, no channel active
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy: - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)

Reaction upon N: NONE
Acknowl. upon N: NONE

A32463 (N) Encoder 2: Analog sensor position value exceeds limit value
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: Re alarm value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
Re alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).

Reaction upon N: NONE
Acknowl. upon N: NONE

A32470 (F, N) Encoder 2: Soiling detected
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: In the case of the alternative encoder system interface on the Sensor Module Cabinet 30 (SMC30), encoder soiling is signaled via a 0 signal at terminal X521.7.
Remedy: - check the plug connections
- replace the encoder or encoder cable

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F32500 (N, A) Encoder 2: Position tracking traversing range exceeded
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/- 32x) of p0421.
For p0411.3 = 1, the maximum traversing range for the configured linear axis is pre-set (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

Remedy:
The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32501 (N, A) Encoder 2: Position tracking encoder position outside tolerance window
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When powered down, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder. Fault value (r0949, interpret decimal):
Deviation (difference) to the last encoder position in increments of the absolute value.
The sign designates the traversing direction.
Note: The deviation (difference) found is also displayed in r0477.
See also: p0413 (Measuring gear, position tracking tolerance window), r0477 (Measuring gear, position difference)
Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).
See also: p0010

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32502 (N, A) Encoder 2: Encoder with measuring gear, without valid signals
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The encoder with measuring gear no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32503 (N, A) Encoder 2: Position tracking cannot be reset
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking for the measuring gear cannot be reset.
### Remedy:
The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

#### Reaction upon N: NONE
#### Acknowl. upon N: NONE
#### Reaction upon A: NONE
#### Acknowl. upon A: NONE

<table>
<thead>
<tr>
<th>A32700</th>
<th>Encoder 2: Effectivity test does not supply the expected value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Fault cause: %1 bin</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The DRIVE-CLiQ encoder fault word supplies fault bits that have been set. Fault value (r0949, interpret binary): Bit x = 1: Effectivity test x unsuccessful.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Replace encoder.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>N32800 (F)</th>
<th>Encoder 2: Group signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td></td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The motor encoder has detected at least one fault.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluates other actual messages.</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F32801 (N, A)</th>
<th>Encoder 2 DRIVE-CLiQ: Sign-of-life missing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check the electrical cabinet design and cable routing for EMC compliance - replace the component involved. See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Reaction upon A:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon A:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F32802 (N, A)</th>
<th>Encoder 2: Time slice overflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A time slice overflow has occurred in encoder 2.</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
x = 9:
  Time slice overflow of the fast (current controller clock cycle) time slice.
x = A:
  Time slice overflow of the average time slice.
x = C:
  Time slice overflow of the slow time slice.
yx = 3E7:
  Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).

Remedy:
  Increase the current controller sampling time

Note:
  For a current controller sampling time = 31.25 µs, use an SMx20 with order number 6SL3055-0AA00-5xA3.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32804 (N, A)  Encoder 2: Checksum error
Message value: \%1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: POWER ON (IMMEDIATELY)
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
  Fault value (r0949, interpret hexadecimal):
  yyyyxxxx hex
  yyyy: Memory area involved.
  xxxx: Difference between the checksum at POWER ON and the actual checksum.
Remedy:
  - carry out a POWER ON (power off/on).
  - upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
  - check whether the permissible ambient temperature for the component is maintained.
  - replace the Sensor Module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32805 (N, A)  Encoder 2: EPROM checksum error
Message value: \%1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Internal parameter data is corrupted.
  Fault value (r0949, interpret hexadecimal):
  01: EEPROM access error.
  02: Too many blocks in the EEPROM.
Remedy:
  Replace the module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### Fault 3-1539

**F32806 (N, A) Encoder 2: Initialization error**

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause</td>
<td>The encoder was not successfully initialized. Fault value (0x0949, interpret hexadecimal): Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4). Bit 2: Mid-voltage matching for track A unsuccessful. Bit 3: Mid-voltage matching for track B unsuccessful. Bit 4: Mid-voltage matching for acceleration input unsuccessful. Bit 5: Mid-voltage matching for track safety A unsuccessful. Bit 6: Mid-voltage matching for track safety B unsuccessful. Bit 7: Mid-voltage matching for track C unsuccessful. Bit 8: Mid-voltage matching for track D unsuccessful. Bit 9: Mid-voltage matching for track R unsuccessful. Bit 10: The difference in mid-voltages between A and B is too great (&gt; 0.5 V) Bit 11: The difference in mid-voltages between C and D is too great (&gt; 0.5 V) Bit 12: The difference in mid-voltages between A and safety B is too great (&gt; 0.5 V) Bit 13: The difference in mid-voltages between B and safety A is too great (&gt; 0.5 V) Bit 14: The standard deviation of the calculated mid-voltages is too great (&gt; 0.3 V) Bit 15: Internal fault - fault when reading a register (CAFE) Bit 16: Internal fault - fault when writing a register (CAFE) Bit 17: Internal fault: No mid-voltage matching available Bit 18: Internal error - ADC access error. Bit 20: Internal error - no zero crossover found. Bit 28: Error while initializing the EnDat 2.2 measuring unit. Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit. Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect. Bit 31: Data of the EnDat 2.2 measuring unit inconsistent. Note: Bit 0, 1: Up to 6SL3055-0AA00-5<em>A0 Bits 2 ... 20: 6SL3055-0AA00-5</em>A1 and higher</td>
</tr>
<tr>
<td>Remedy</td>
<td>Acknowledge fault. If the fault cannot be acknowledged: Bits 2 ... 9: Check encoder power supply. Bits 2 ... 14: Check the corresponding cable. Bit 15 with no other bits: Check track R, check settings in p0404. Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit. Bit 29 ... 31: Replace the defective measuring unit.</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Reaction upon A</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon A</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### Fault 3-1539

**F32811 (N, A) Encoder 2: Encoder serial number changed**

<table>
<thead>
<tr>
<th>Message value</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF1 (NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause</td>
<td>The encoder serial number has changed. The change is only checked for encoders with serial number (e.g. EnDat encoders). - The encoder was replaced. Note: With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2). When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

Proceed as follows to hide serial number monitoring:
- set the following serial numbers for the corresponding Encoder Data Set: p0441 = FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.

Remedy:
Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32812 (N, A) Encoder 2: Requested cycle or RX/TX timing not supported

Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
A cycle requested from the Control Unit or RX/TX timing is not supported.
Fault value (r0949, interpret decimal):
0: Application cycle is not supported.
1: DRIVE-CLiQ cycle is not supported.
2: Distance between RX and TX instants in time too low.
3: TX instant in time too early.

Remedy:
Carry out a POWER ON (power off/on) for all components.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32813 Encoder 2: Hardware logic unit failed

Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT

Cause:
The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):
Bit 0: ALU watchdog has responded.
Bit 1: ALU has detected a sign-of-life error.

Remedy:
Replace encoder.

F32820 (N, A) Encoder 2 DRIVE-CLiQ: Telegram error

Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY

Cause:
A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned.
Fault cause:
1 (= 01 hex): Checksum error (CRC error).
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex): The length of the receive telegram does not match the receive list.
5 (= 05 hex): The type of the receive telegram does not match the receive list.
6 (= 06 hex): The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 00 hex):
No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32835 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32836 (N, A) Encoder 2 DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Acknowl. upon A: NONE
Faults and alarms

List of faults and alarms

Reaction upon A: NONE
Acknowl. upon A: NONE

F32837 (N, A) Encoder 2 DRIVE-CLiQ: Component fault
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex): Error in the telegram header.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32845 (N, A) Encoder 2 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause:
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
Carry out a POWER ON.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32850 (N, A) Encoder 2: Encoder evaluation, internal software error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause: An internal software error has occurred in the Sensor Module of encoder 2.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.
10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: Communication with AD converter faulted.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.

Remedy:
- replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact the Hotline.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32851 (N, A) Encoder 2 DRIVE-CLiQ (CU): Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause:
10 (= 0A hex): The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Upgrade the firmware of the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32860 (N, A) Encoder 2 DRIVE-CLiQ (CU): Telegram error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit. Fault cause:
1 (= 01 hex): Checksum error (CRC error).
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex): The length of the receive telegram does not match the receive list.
5 (= 05 hex): The type of the receive telegram does not match the receive list.
6 (= 06 hex): The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex): The error bit in the receive telegram is set.
Faults and alarms

List of faults and alarms

16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32875 (N, A) Encoder 2 DRIVE-CLiQ (CU): Supply voltage failed
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause: 9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32885 (N, A) Encoder 2 DRIVE-CLiQ (CU): Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit. The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32886 (N, A) Encoder 2 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data
Message value:
Component number: %1, fault cause: %2
Drive object:
VECTOR_G
Reaction:
OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge:
IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32887 (N, A) Encoder 2 DRIVE-CLiQ (CU): Component fault
Message value:
Component number: %1, fault cause: %2
Drive object:
VECTOR_G
Reaction:
OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge:
IMMEDIATELY
Cause:
Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 2). Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Faults and alarms

List of faults and alarms

96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32895 (N, A) Encoder 2 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value:
Component number: %1, fault cause: %2

Drive object:
VECTOR_G

Reaction:
OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

Acknowledge:
IMMEDIATELY

Cause:
A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 2) involved to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32896 (N, A) Encoder 2 DRIVE-CLiQ (CU): Inconsistent component properties

Message value:
Component number: %1

Drive object:
VECTOR_G

Reaction:
OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)

Acknowledge:
IMMEDIATELY

Cause:
The properties of the DRIVE-CLiQ component (Sensor Module for encoder 2), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.

Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
F32899 (N, A) Encoder 2: Unknown fault

Message value: New message: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Sensor Module for encoder 2 that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note: If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy:
- replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A32902 (F, N) Encoder 2: SPI-BUS error occurred

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Error when operating the internal SPI bus.
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact the Hotline.

Reaction upon F: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F32905 (N, A) Encoder 2: Parameterization error

Message value: Parameter: %1, supplementary information: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: A parameter of encoder 2 was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):

- yyyy = supplementary information, xxxx = parameter
  xxxx = 421:
  For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.
  yyyy = 0:
  No information available.
  yyyy = 1:
  The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).
  yyyy = 2:
  A code number for an identified encoder has been entered into p0400, however, no identification was carried out.
  Please start a new encoder identification.
  yyyy = 3:
  A code number for an identified encoder has been entered into p0400, however, no identification was carried out.
  Please select a listed encoder in p0400 with a code number < 10000.

Note:

- yyyy = 0:
  No information available.
- yyyy = 1:
  The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).
- yyyy = 2:
  A code number for an identified encoder has been entered into p0400, however, no identification was carried out.
  Please start a new encoder identification.
- yyyy = 3:
  A code number for an identified encoder has been entered into p0400, however, no identification was carried out.
  Please select a listed encoder in p0400 with a code number < 10000.
Faults and alarms

List of faults and alarms

yyyy = 4:
This component does not support SSI encoders (p0404.9 = 1) without track A/B.

yyyy = 5:
For SQW encoder, value in p4686 greater than in p0425.

yyyy = 6:
DRIVE-CLiQ encoder cannot be used with this firmware version.

yyyy = 7:
For an SQW encoder, the Xact1 correction (p0437.2) is only permitted with equidistant zero marks.

yyyy = 8:
The motor pole pair width is not supported by the linear scale being used.

yyyy = 9:
The length of the position in the EnDat protocol may be a maximum of 32 bits.

yyyy = 10:
The connected encoder is not supported.

Remedy:
- check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.
- re-parameter number = 314:
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "meas-
 uring gear ratio" must be less than or equal to 1000 ((r6313 * p0433) / p0432 <= 1000).

F32912 Encoder 2: Device combination is not permissible

Message value:
%1

Drive object:
VECTOR_G

Reaction:
ENCODER (IASC/DCBRAKE, NONE)

Acknowledge:
PULSE INHIBIT

Cause:
The selected device combination is not supported.
Fault value (r0949, interpret decimal):
1003:
The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit
has a pulse number/resolution of 2^n.
1005:
The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter.
1006:
The maximum duration (31.25 µs) of the EnDat transfer was exceeded.
2001:
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 con-
verter.
2002:
The resolution of the linear measuring unit does not match the pole pair width of the linear motor

Remedy:
Re fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- Set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A32915 (F, N) Encoder 2: Configuration error

Message value:
%1

Drive object:
VECTOR_G

Reaction:
NONE

Acknowledge:
NONE

Cause:
The configuration for encoder 2 is incorrect.
Alarm value (r2124, interpret decimal):
1:
Re-parameterization between fault/alarm is not permissible.
When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.

**Remedy:**
- Re alarm value = 1:
  - No re-parameterization between fault/alarm.
- Re alarm value = 419:
  - Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.

**Reaction upon F:** NONE (IASC/DCBRAKE)

**Acknowl. upon F:** IMMEDIATELY

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

---

**F32916 (N, A) Encoder 2: Parameterization fault**

**Message value:** Parameter: %1, supplementary information: %2

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)

**Acknowledge:** IMMEDIATELY

**Cause:** A parameter of encoder 2 was detected as being incorrect.
- It is possible that the parameterized encoder type does not match the connected encoder.
- The parameter involved can be determined as follows:
  - determine the parameter number using the fault value (r0949).
  - determine the parameter index (p0187).
- Fault value (r0949, interpret decimal):
  - Parameter number.

**Note:**
- This fault is only output for encoders where r0404.10 = 1 or r0404.11 = 1. It corresponds to A32905 with encoders where r0404.10 = 0 and r0404.11 = 0.

**Remedy:**
- check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

---

**A32920 (F, N) Encoder 2: Temperature sensor fault**

**Message value:** Fault cause: %1, channel number: %2

**Drive object:** VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** When evaluating the temperature sensor, an error occurred.
- Fault cause:
  1 (= 01 hex): Wire breakage or sensor not connected (KTY: R > 1630 Ohm).
  2 (= 02 hex): Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).

**Additional values:**
- Only for internal Siemens troubleshooting.
- Note regarding the message value:
  - The individual information is coded as follows in the message value (r0949/r2124):
    - 0000yyxx hex: yy = channel number, xx = error cause

**Remedy:**
- check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).

**Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

**Acknowl. upon F:** IMMEDIATELY

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE
### A32930 (N)  Encoder 2: Data logger has saved data

**Message value:**
-  
**Drive object:**
  VECTOR_G  
**Reaction:**
  NONE  
**Acknowledge:**
  NONE  
**Cause:**
For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.

The diagnostics data is saved in the following folder:

```
/USER/SINAMICS/DATA/SMTRC00.BIN
...
/USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
```

The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).

**Note:**
Only Siemens can evaluate the BIN files.

**Remedy:**
- Not necessary.
- The alarm disappears automatically.
- The data logger is ready to record the next fault case.

**Reaction upon N:**
NONE  
**Acknowl. upon N:**
NONE

### A32940 (F, N)  Encoder 2: Spindle sensor S1 voltage incorrect

**Message value:**
%1  
**Drive object:**
VECTOR_G  
**Reaction:**
NONE  
**Acknowledge:**
NONE  
**Cause:**
The voltage of analog sensor S1 is outside the permissible range.

Fault value (r0949, interpret decimal):
Signal level from sensor S1.

**Note:**
A signal level of 500 mV corresponds to the numerical value 500 dec.

**Remedy:**
- Check the clamped tool.
- Check the tolerance and if required, adapt (p5040).
- Check the thresholds and if required, adapt (p5041).
- Check analog sensor S1 and connections.

**Reaction upon F:**
NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:**
IMMEDIATELY  
**Reaction upon N:**
NONE  
**Acknowl. upon N:**
NONE

### F32950  Encoder 2: Internal software error

**Message value:**
%1  
**Drive object:**
VECTOR_G  
**Reaction:**
ENCODER (OFF2)  
**Acknowledge:**
POWER ON  
**Cause:**
An internal software error has occurred.

Fault value (r0949, interpret decimal):
Information about the fault source.

**Note:**
Only for internal Siemens troubleshooting.

**Remedy:**
- If necessary, upgrade the firmware in the Sensor Module to a later version.
- contact the Hotline.
A32999 (F, N)  Encoder 2: Unknown alarm
Message value: New message: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A alarm has occurred on the Sensor Module for encoder 2 that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Alarm value (r2124, interpret decimal):
Alarm number.
Note: If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.
Remedy:
- replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F33100 (N, A)  Encoder 3: Zero mark distance error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The measured zero mark distance does not correspond to the parameterized zero mark distance. For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system. The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal):
Last measured zero mark distance in increments (4 increments = 1 encoder pulse).
The sign designates the direction of motion when detecting the zero mark distance.
Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
  . check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
- replace the encoder or encoder cable
Reaction upon N: NONE
Acknowl. upon N: NONE

F33101 (N, A)  Encoder 3: Zero mark failed
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The 1.5 x parameterized zero mark distance was exceeded.
The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). Fault value (r0949, interpret decimal):
Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse).
Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
  . check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).
### Faults and alarms

#### List of faults and alarms

- **F33103 (N, A)**  
  **Encoder 3: Amplitude error, track R**

  **Message value:**  
  R track: %1

  **Drive object:**  
  VECTOR_G

  **Reaction:**  
  OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

  **Acknowledge:**  
  IMMEDIATELY

  **Cause:**  
  The amplitude of the reference track signal (track R) does not lie within the tolerance bandwidth for encoder 3. The fault can be initiated when the unipolar voltage level is exceeded (RP/RN) or if the differential amplitude is undershot.

  **Fault value (r0949, interpret hexadecimal):**  
  yyyyxxxx hex: yyyy = 0, xxxx = Signal level, track R (16 bits with sign)

  The response thresholds of the unipolar signal levels of the encoder are between < 1400 mV and > 3500 mV.

  The response threshold for the differential signal level of the encoder is < -1600 mV.

  A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

  **Note:**
  The analog value of the amplitude error is not measured at the same time with the hardware fault output by the Sensor Module.

  The fault value can only be represented between -32767 ... 32767 dec (-770 ... 770 mV).

  The signal level is not evaluated unless the following conditions are satisfied:
  - Sensor Module properties available (r0459.31 = 1).
  - Monitoring active (p0437.31 = 1).

  **Remedy:**
  - check the speed range; frequency characteristic (amplitude characteristic) of the measuring equipment might not be sufficient for the speed range
  - check that the encoder cables and shielding are routed in compliance with EMC.
  - check the plug connections and contacts of the encoder cable.
  - check whether the zero mark is connected and the signal cables RP and RN have been connected correctly
  - replace the encoder cable.
  - if the coding disk is soiled or the lighting aged, replace the encoder.

  **Reaction upon N:** NONE  
  **Acknowl. upon N:** NONE  
  **Reaction upon A:** NONE  
  **Acknowl. upon A:** NONE

- **F33110 (N, A)**  
  **Encoder 3: Serial communications error**

  **Message value:**  
  Fault cause: %1 bin

  **Drive object:**  
  VECTOR_G

  **Reaction:**  
  OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

  **Acknowledge:**  
  PULSE INHIBIT

  **Cause:**  
  Serial communication protocol transfer error between the encoder and evaluation module.

  **Fault value (r0949, interpret binary):**
  - Bit 0: Alarm bit in the position protocol.
  - Bit 1: Incorrect quiescent level on the data line.
  - Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
  - Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
  - Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.
  - Bit 5: Internal error in the serial driver: An illegal mode command was requested.
  - Bit 6: Timeout when cyclically reading.
  - Bit 7: Timeout for the register communication.
  - Bit 8: Protocol is too long (e.g. > 64 bits).
  - Bit 9: Receive buffer overflow.
  - Bit 10: Frame error when reading twice.
  - Bit 11: Parity error.
  - Bit 12: Data line signal level error during the monoflop time.

  **Reaction upon N:** NONE  
  **Acknowl. upon N:** NONE  
  **Reaction upon A:** NONE  
  **Acknowl. upon A:** NONE
Bit 13: Data line incorrect.
Bit 14: Fault for the register communication.

**Remedy:**
- Re fault value, bit 0 = 1:
  - Enc defect F31111 may provide additional details.
- Re fault value, bit 1 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 2 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 3 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable.
- Re fault value, bit 4 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 5 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 6 = 1:
  - Update Sensor Module firmware.
- Re fault value, bit 7 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.
- Re fault value, bit 8 = 1:
  - Check parameterization (p0429.2).
- Re fault value, bit 9 = 1:
  - EMC / connect the cable shield, replace the encoder or encoder cable, replace the Sensor Module.
- Re fault value, bit 10 = 1:
  - Check parameterization (p0429.2, p0449).
- Re fault value, bit 11 = 1:
  - Check parameterization (p0436).
- Re fault value, bit 12 = 1:
  - Check parameterization (p0429.6).
- Re fault value, bit 13 = 1:
  - Check data line.
- Re fault value, bit 14 = 1:
  - Incorrect encoder type / replace the encoder or encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

**F33111 (N, A)**
**Encoder 3: Absolute encoder internal fault**

**Message value:**
Fault cause: %1 bin, additional information: %2

**Drive object:**
VECTOR_G

**Reaction:**
OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:**
PULSE INHIBIT

**Cause:**
The absolute encoder fault word supplies fault bits that have been set. Fault value (r0949, interpret binary):

- yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
- yyyy = 0:
  - Bit 0: Lighting system failed.
  - Bit 1: Signal amplitude too low.
  - Bit 2: Position value incorrect.
  - Bit 3: Encoder power supply overvoltage condition.
  - Bit 4: Encoder power supply undervoltage condition.
  - Bit 5: Encoder power supply overcurrent condition.
  - Bit 6: The battery must be changed.
- yyyy = 1:
  - Bit 0: Signal amplitude outside the control range.
  - Bit 1: Error multiturn interface
  - Bit 2: Internal data error (singleturn/multiturn not with single steps).
  - Bit 3: Error EEPROM interface.
  - Bit 4: SAR converter error.
  - Bit 5: Fault for the register data transfer.
Faults and alarms

List of faults and alarms

Bit 6: Internal error identified at the error pin (nErr).
Bit 7: Temperature threshold exceeded or fallen below.

Remedy:

For $yyyy = 0$:
- Re fault value, bit 0 = 1:
  Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
- Re fault value, bit 1 = 1:
  Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
- Re fault value, bit 2 = 1:
  Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
- Re fault value, bit 3 = 1:
  5 V power supply voltage fault.
  When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
- Re fault value, bit 4 = 1:
  5 V power supply voltage fault.
  When using an SMC: Check the plug-in cable between the encoder and SMC or replace the SMC.
- Re fault value, bit 5 = 1:
  Encoder is defective. Replace the encoder, where the motor encoder has a direct DRIVE-CLiQ socket: Replace the motor.
- Re fault value, bit 6 = 1:
  The battery must be changed (only for encoders with battery back-up).
For $yyyy = 1$:
- Encoder is defective. Replace encoder.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33112 (N, A) Encoder 3: Error bit set in the serial protocol

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The encoder sends a set error bit via the serial protocol.
Fault value ($r0949$, interpret binary):
- Bit 0: Fault bit in the position protocol.

Remedy:
- For fault value, bit 0 = 1:
  In the case of an EnDat encoder, F31111 may provide further details.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33115 (N, A) Encoder 3: Amplitude error track A or B ($A^2 + B^2$)

Message value: A track: %1, B-track: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The amplitude (root of $A^2 + B^2$) for encoder 3 exceeds the permissible tolerance.
Fault value ($r0949$, interpret hexadecimal):
- yyyy = Signal level, track B (16 bits with sign).
- xxxx = Signal level, track A (16 bits with sign).

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 170 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note for sensors modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response thresholds are < 1070 mV and > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

**Remedy:**
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
The following applies to measuring systems without their own bearing system:
- adjust the scanning head and check the bearing system of the measuring wheel.
The following applies for measuring systems with their own bearing system:
- ensure that the encoder housing is not subject to any axial force.

**F33116 (N, A) Encoder 3: Amplitude error monitoring track A + B**
**Message value:** A track: %1, B-track: %2
**Drive object:** VECTOR_G
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY
**Cause:**
The amplitude of the rectified encoder signals A and B and the amplitude from the roots of A^2 + B^2 for encoder 3 are not within the tolerance bandwidth.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:

yyyy = Signal level, track B (16 bits with sign).
xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response thresholds are < 130 mV (observe the frequency response of the encoder) and > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

**Remedy:**
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).

**F33117 (N, A) Encoder 3: Inversion error signals A/B/R**
**Message value:** Fault cause: %1 bin
**Drive object:** VECTOR_G
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
**Acknowledge:** IMMEDIATELY
**Cause:**
For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R.
Fault value (r0949, interpret binary):
Bits 0 ... 15: Only for internal Siemens troubleshooting.
Bit 16: Error track A.
Bit 17: Error track B.
Bit 18: Error track R.
Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), CU32, and CU310, the following applies:
A square-wave encoder without track R is used and track monitoring (p0405.2 = 1) is activated.

Remedy:
- Check the encoder/cable.
- Does the encoder supply signals and the associated inverted signals?

Note:
For SMC30 (order no. 6SL3055-0AA00-5CA0 and 6SL3055-0AA00-5CA1 only), the following applies:
- check the setting of p0405 (p0405.2 = 1 is only possible if the encoder is connected at X520).
For a square-wave encoder without track R, the following jumpers must be set for the connection at X520 (SMC30) or X23 (CU32, CU310):
- pin 10 (reference signal R) <-> pin 7 (encoder power supply, ground)
- pin 11 (reference signal R inverted) <-> pin 4 (encoder power supply)

F33118 (N, A)  Encoder 3: Speed difference outside the tolerance range
Message value:  %1
Drive object:  VECTOR_G
Reaction:  OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledgment:  PULSE INHIBIT
Cause:  For an HTL/TTL encoder, the speed difference has exceeded the value in p0492 over several sampling cycles.
The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
See also:  p0492
Remedy:
- check the tachometer feeder cable for interruptions.
- check the grounding of the tachometer shielding.
- if required, increase the maximum speed difference per sampling cycle (p0492).

F33120 (N, A)  Encoder 3: Power supply voltage fault
Message value:  Fault cause: %1 bin
Drive object:  VECTOR_G
Reaction:  OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledgment:  PULSE INHIBIT
Cause:  A power supply fault was detected for encoder 3.
Fault value (r0949, interpret binary):
Bit 0: Undervoltage condition on the sense line.
Bit 1: Overcurrent condition for the encoder power supply.
Bit 2: Overcurrent condition for encoder power supply on cable resolver excitation negative.
Bit 3: Overcurrent condition for encoder power supply on cable resolver excitation positive.
Bit 4: The 24 V power supply of the Power Module (PM) is overloaded.
Bit 5: Overcurrent at the EnDat connection of the converter.
Bit 6: Overvoltage at the EnDat connection of the converter.
Bit 7: Hardware fault at the EnDat connection of the converter.
Note:
If the encoder cables 6FX2002-2EQ00-.... and 6FX2002-2CH00-.... are interchanged, this can result in the encoder being destroyed because the pins of the operating voltage are reversed.
Remedy:
- check fault value, bit 0 = 1:
- correct encoder cable connected?
- check the plug connections of the encoder cable.
- SMC30: Check the parameterization (p0404.22).
Re fault value, bit 1 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 2 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 3 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable
Re fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.
Re fault value, bit 6, 7 = 1:
- Replace the defective EnDat 2.2 converter.

F33121 (N, A) Encoder 3: Coarse position error
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: For the actual value sensing, an error was detected on the module. As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F33122 Encoder 3: Internal power supply voltage faulty
Message value: %1
Drive object: VECTOR_G
Reaction: ENCODER
Acknowledge: IMMEDIATELY
Cause: Fault in internal reference voltage of ASICs for encoder 3.
Fault value (r0949, interpret decimal):
1: Reference voltage error.
2: Internal undervoltage.
3: Internal overvoltage.
Remedy: Replace the motor with DRIVE-CLiQ or the appropriate Sensor Module.

F33123 (N, A) Encoder 3: Signal level A/B unipolar outside tolerance
Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The unipolar level (AP/AN or BP/BN) for encoder 3 is outside the permissible tolerance.
Fault value (r0949, interpret binary):
Bit 0 = 1: Either AP or AN outside the tolerance.
Bit 16 = 1: Either BP or BN outside the tolerance.
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV. The response thresholds are < 1700 mV and > 3300 mV.
Faults and alarms

List of faults and alarms

Note:
The signal level is not evaluated unless the following conditions are satisfied:
- Sensor Module properties available (r0459.31 = 1).
- Monitoring active (p0437.31 = 1).

Remedy:
- make sure that the encoder cables and shielding are installed in an EMC-compliant manner.
- check the plug connections and contacts of the encoder cable.
- check the short-circuit of a signal cable with mass or the operating voltage.
- replace the encoder cable.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33125 (N, A)  Encoder 3: Amplitude error track A or B overcontrolled
Message value: A track: %1, B-track: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The amplitude of track A or B for encoder 3 exceeds the permissible tolerance band.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
  yyyy = Signal level, track B (16 bits with sign).
  xxxx = Signal level, track A (16 bits with sign).
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold is > 750 mV. This fault also occurs if the A/D converter is overcontrolled.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.
Note: The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is > 3582 mV.
A signal level of 2900 mV peak value corresponds to the numerical value 6666 hex = 26214 dec.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33126 (N, A)  Encoder 3: Amplitude AB too high
Message value: Amplitude: %1, Angle: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The amplitude (root of A^2 + B^2 or |A| + |B|) for encoder 3 exceeds the permissible tolerance.
Fault value (r0949, interpret hexadecimal):
yyyyxxxx hex:
  yyyy = Angle
  xxxx = Amplitude, i.e. root from A^2 + B^2 (16 bits without sign)
The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).
The response threshold for (|A| + |B|) is > 1120 mV or the root of (A^2 + B^2) > 955 mV.
A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.
Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.
Remedy:
- check that the encoder cables and shielding are routed in compliance with EMC.
- replace the encoder or encoder cable
### F33129 (N, A) Encoder 3: Position difference, hall sensor/track C/D and A/B too large

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:** PULSE INHIBIT

**Cause:**
The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.

One period of track C/D corresponds to 360 ° mechanical.

One period of the Hall signal corresponds to 360 ° electrical.

The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

After the fine synchronization using one reference mark or 2 reference marks for distance-coded encoders, this fault is no longer initiated, but instead, Alarm A33429.

**Fault value (r0949, interpret decimal):**

For track C/D, the following applies:

- Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).

For Hall signals, the following applies:

- Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

**Remedy:**
- track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

### F33130 (N, A) Encoder 3: Zero mark and position error from the coarse synchronization

**Message value:** Angular deviation, electrical: %1, angle, mechanical: %2

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)

**Acknowledge:** PULSE INHIBIT

**Cause:**
After initializing the pole position using track C/D, Hall signals or pole position identification routine, the zero mark was detected outside the permissible range. For distance-coded encoders, the test is carried out after passing 2 zero marks. Fine synchronization was not carried out.

When initializing via track C/D (p0404) then it is checked whether the zero mark occurs in an angular range of +/-18 ° mechanical.

When initializing via Hall sensors (p0404) or pole position identification (p1982) it is checked whether the zero mark occurs in an angular range of +/-60 ° electrical.

**Fault value (r0949, interpret hexadecimal):** yyyyxxxx hex

yyyy: Determined mechanical zero mark position (can only be used for track C/D).

xxxx: Deviation of the zero mark from the expected position as electrical angle.

Scaling: 32768 dec = 180 °

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- if the Hall sensor is used as an equivalent for track C/D, check the connection.
- Check the connection of track C or D.
- replace the encoder or encoder cable
### F33131 (N, A)

**Message value:** %1

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)

**Acknowledge:** PULSE INHIBIT

**Cause:** Absolute encoder:

When cyclically reading the absolute position, an excessively high difference to the incremental position was detected. The absolute position that was read is rejected.

Limit value for the deviation:
- EnDat encoder: Is supplied from the encoder and is a minimum of 2 quadrants (e.g. EQI 1325 > 2 quadrants, EQN 1325 > 50 quadrants).
- other encoders: 15 pulses = 60 quadrants.

Incremental encoder:

When the zero pulse is passed, a deviation in the incremental position was detected.

For equidistant zero marks, the following applies:
- The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.

For distance-coded zero marks, the following applies:
- the first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.

Fault value (r0949, interpret decimal):

Deviation in quadrants (1 pulse = 4 quadrants).

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check whether the coding disk is dirty or there are strong ambient magnetic fields.
- adapt the parameter for the clearance between zero marks (p0425).
- if message output above speed threshold, reduce filter time if necessary (p0438).

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

### F33135

**Message value:** Fault cause: %1 bin

**Drive object:** VECTOR_G

**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

**Acknowledge:** PULSE INHIBIT

**Cause:** The DRIVE-CLiQ encoder supplies status information via bits in an internal status/fault word.

Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Fault value (r0949, interpret binary):

- Bit 0: F1 (safety status display)
- Bit 1: F2 (safety status display)
- Bit 2: Lighting (reserved)
- Bit 3: Signal amplitude (reserved)
- Bit 4: Position value (reserved)
- Bit 5: Overvoltage (reserved)
- Bit 6: Undervoltage (reserved)
- Bit 7: Overcurrent (reserved)
- Bit 8: Battery (reserved)
- Bit 16: Lighting (→ F3x135, x = 1, 2, 3)
- Bit 17: Signal amplitude (→ F3x135, x = 1, 2, 3)
- Bit 18: Singleturn position 1 (→ F3x135, x = 1, 2, 3)
- Bit 19: Overvoltage (→ F3x135, x = 1, 2, 3)
- Bit 20: Undervoltage (→ F3x135, x = 1, 2, 3)
- Bit 21: Overcurrent (→ F3x135, x = 1, 2, 3)
- Bit 22: Temperature exceeded (→ F3x405, x = 1, 2, 3)
- Bit 23: Singleturn position 2 (safety status display)
- Bit 24: Singleturn system (→ F3x135, x = 1, 2, 3)
Faults and alarms

List of faults and alarms

Bit 25: Singleturn power down (→ F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (→ F3x136, x = 1, 2, 3)
Bit 27: Multiturn position 2 (→ F3x136, x = 1, 2, 3)
Bit 28: Multiturn system (→ F3x136, x = 1, 2, 3)
Bit 29: Multiturn power down (→ F3x136, x = 1, 2, 3)
Bit 30: Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)
Bit 31: Multiturn battery (reserved)

Remedy:
Replace DRIVE-CLiQ encoder.

F33136

Encoder 3: Error when determining multiturn information

Message value: Fault cause: %1 bin

Drive object: VECTOR_G

Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause:
The DRIVE-CLiQ encoder supplies status information via bits in an internal status/fault word. Some of these bits cause this fault to be triggered. Other bits are status displays. The status/fault word is displayed in the fault value.

Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display)
Bit 1: F2 (safety status display)
Bit 2: Lighting (reserved)
Bit 3: Signal amplitude (reserved)
Bit 4: Position value (reserved)
Bit 5: Overvoltage (reserved)
Bit 6: Undervoltage (reserved)
Bit 7: Overcurrent (reserved)
Bit 8: Battery (reserved)
Bit 16: Lighting (→ F3x135, x = 1, 2, 3)
Bit 17: Signal amplitude (→ F3x135, x = 1, 2, 3)
Bit 18: Singleturn position 1 (→ F3x135, x = 1, 2, 3)
Bit 19: Overvoltage (→ F3x135, x = 1, 2, 3)
Bit 20: Undervoltage (→ F3x135, x = 1, 2, 3)
Bit 21: Overcurrent (→ F3x135, x = 1, 2, 3)
Bit 22: Temperature exceeded (→ F3x405, x = 1, 2, 3)
Bit 23: Singleturn position 2 (safety status display)
Bit 24: Singleturn system (→ F3x135, x = 1, 2, 3)
Bit 25: Singleturn power down (→ F3x135, x = 1, 2, 3)
Bit 26: Multiturn position 1 (→ F3x136, x = 1, 2, 3)
Bit 27: Multiturn position 2 (→ F3x136, x = 1, 2, 3)
Bit 28: Multiturn system (→ F3x136, x = 1, 2, 3)
Bit 29: Multiturn power down (→ F3x136, x = 1, 2, 3)
Bit 30: Multiturn overflow/underflow (→ F3x136, x = 1, 2, 3)
Bit 31: Multiturn battery (reserved)

Remedy:
Replace DRIVE-CLiQ encoder.

F33137

Encoder 3: Internal fault when determining the position

Message value: Fault cause: %1 bin

Drive object: VECTOR_G

Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)

Acknowledge: PULSE INHIBIT

Cause:
The DRIVE-CLiQ encoder fault word supplies fault bits that have been set. Fault value (r0949, interpret binary):
Only for internal Siemens troubleshooting.

Remedy:
Replace encoder.
Faults and alarms

List of faults and alarms

F33138   Encoder 3: Internal error when determining multiturn information
Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause: The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):
- Only for internal SIEMENS troubleshooting.
Remedy: Replace encoder.

F33150 (N, A)   Encoder 3: Initialization error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: Encoder functionality selected in p0404 is not operating correctly.
Fault value (r0949, interpret hexadecimal):
- Encoder malfunction.
- The bit assignment corresponds to that of p0404 (e.g. bit 5 set: Error track C/D).
Remedy: - Check that p0404 is correctly set.
- Check the encoder type used (incremental/absolute) and for SMCxx, the encoder cable.
- If relevant, note additional fault messages that describe the fault in detail.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33151 (N, A)   Encoder 3: Encoder speed for initialization AB too high
Message value: %1
Drive object: VECTOR_G
Reaction: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The encoder speed is too high during while initializing the sensor.
Remedy: Reduce the speed of the encoder accordingly during initialization.
If necessary, de-activate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33152 (N, A)   Encoder 3: Maximum input frequency exceeded
Message value: %1
Drive object: VECTOR_G
Reaction: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The maximum input frequency of the encoder evaluation has been exceeded.
Fault value (r0949, interpret decimal):
- Actual input frequency in Hz.
See also: p0408 (Rotary encoder pulse No.)
Remedy: - Reduce the speed.
- Use an encoder with a lower pulse number (p0408).
Reaction upon N: NONE
Acknowl. upon N: NONE
Acknowledgement upon A: NONE
### F33160 (N, A) Encoder 3: Analog sensor channel A failed

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
  - The input voltage of the analog sensor is outside the permissible limits.
  - Fault value (r0949, interpret decimal):
    1: Input voltage outside detectable measuring range.
    2: Input voltage outside the measuring range set in (p4673).
    3: The absolute value of the input voltage has exceeded the range limit (p4676).
- **Remedy:**
  - For fault value = 1:
    - check the output voltage of the analog sensor.
  - For fault value = 2:
    - check the voltage setting for each encoder period (p4673).
  - For fault value = 3:
    - check the range limit setting and increase it if necessary (p4676).

### F33161 (N, A) Encoder 3: Analog sensor channel B failed

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
  - The input voltage of the analog sensor is outside the permissible limits.
  - Fault value (r0949, interpret decimal):
    1: Input voltage outside detectable measuring range.
    2: Input voltage outside the measuring range set in (p4675).
    3: The absolute value of the input voltage has exceeded the range limit (p4676).
- **Remedy:**
  - For fault value = 1:
    - check the output voltage of the analog sensor.
  - For fault value = 2:
    - check the voltage setting for each encoder period (p4675).
  - For fault value = 3:
    - check the range limit setting and increase it if necessary (p4676).

### F33163 (N, A) Encoder 3: Analog sensor position value exceeds limit value

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** ENCODER (IASC/DCBRAKE, NONE)
- **Acknowledge:** PULSE INHIBIT
- **Cause:**
  - The position value has exceeded the permissible range of -0.5 ... +0.5.
  - Fault value (r0949, interpret decimal):
    1: Position value from the LVDT sensor.
    2: Position value from the encoder characteristic.
**Faults and alarms**

**List of faults and alarms**

<table>
<thead>
<tr>
<th>Remedy:</th>
<th>For fault value = 1:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Check the LVDT ratio (p4678).</td>
</tr>
<tr>
<td></td>
<td>- Check the reference signal connection at track B.</td>
</tr>
<tr>
<td></td>
<td>For fault value = 2:</td>
</tr>
<tr>
<td></td>
<td>- Check the coefficients of the characteristic (p4663 ... p4666).</td>
</tr>
</tbody>
</table>

| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |

### A33400 (F, N) Encoder 3: Alarm threshold zero mark distance error

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The measured zero mark distance does not correspond to the parameterized zero mark distance. |
|         | For distance-coded encoders, the zero mark distance is determined from zero marks detected pairs. This means that if a zero mark is missing, depending on the pair generation, this cannot result in a fault and also has no effect in the system. |
|         | The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). |
|         | Alarm value (r2124, interpret decimal): |
|         | Last measured zero mark distance in increments (4 increments = 1 encoder pulse). |
|         | The sign designates the direction of motion when detecting the zero mark distance. |
| Remedy: | - Check that the encoder cables are routed in compliance with EMC. |
|         | - Check the plug connections. |
|         | - Check the encoder type (encoder with equidistant zero marks). |
|         | - Adapt the parameter for the distance between zero marks (p0424, p0425). |
|         | - Replace the encoder or encoder cable |
| Reaction upon F: | NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2) |
| Acknowl. upon F: | IMMEDIATELY |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |

### A33401 (F, N) Encoder 3: Alarm threshold zero mark failed

| Message value: | %1 |
| Drive object: | VECTOR_G |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The 1.5 x parameterized zero mark distance was exceeded. |
|         | The zero mark distance for the zero mark monitoring is set in p0425 (rotary encoder) or p0424 (linear encoder). |
|         | Alarm value (r2124, interpret decimal): |
|         | Number of increments after POWER ON or since the last zero mark that was detected (4 increments = 1 encoder pulse). |
| Remedy: | - Check that the encoder cables are routed in compliance with EMC. |
|         | - Check the plug connections. |
|         | - Check the encoder type (encoder with equidistant zero marks). |
|         | - Adapt the parameter for the clearance between zero marks (p0425). |
|         | - Replace the encoder or encoder cable |
| Reaction upon F: | NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2) |
| Acknowl. upon F: | IMMEDIATELY |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |
F33405 (N, A) Encoder 3: Temperature in the encoder evaluation inadmissible

Message value: %1

Drive object: VECTOR_G

Reaction: ENCODER (IASC/DCBRAKE, NONE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowledge: IMMEDIATELY (POWER ON)

Cause: The encoder evaluation for a motor with DRIVE-CLiQ has detected an inadmissible temperature.
Alarm value (r2124, interpret decimal):
Measured board/module temperature in 0.1 °C.

Remedy: Reduce the ambient temperature for the DRIVE-CLiQ connection of the motor.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A33407 (F, N) Encoder 3: Function limit reached

Message value: %1

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: The encoder has reached one of its function limits. A service is recommended.
Alarm value (r2124, interpret decimal):
1 : Incremental signals
3 : Absolute track
4 : Code connection

Remedy: Perform service. Replace the encoder if necessary.

Note:
The actual functional reserve of an encoder can be displayed via r4651.
See also: p4650 (Encoder functional reserve component number), r4651 (Encoder functional reserve)

Reaction upon F: NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33410 (F, N) Encoder 3: Serial communications

Message value: Fault cause: %1 bin

Drive object: VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: Serial communication protocol transfer error between the encoder and evaluation module.
Alarm value (r2124, interpret binary):
Bit 0: Alarm bit in the position protocol.
Bit 1: Incorrect quiescent level on the data line.
Bit 2: Encoder does not respond (does not supply a start bit within 50 ms).
Bit 3: CRC error: The checksum in the protocol from the encoder does not match the data.
Bit 4: Encoder acknowledgement error: The encoder incorrectly understood the task (request) or cannot execute it.
Bit 5: Internal error in the serial driver: An illegal mode command was requested.
Bit 6: Timeout when cyclically reading.
Bit 8: Protocol is too long (e.g. > 64 bits).
Bit 9: Receive buffer overflow.
Bit 10: Frame error when reading twice.
Bit 11: Parity error.
Bit 12: Data line signal level error during the monoflop time.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.
List of faults and alarms

A33411 (F, N) Encoder 3: Absolute encoder signals internal alarms

Message value: Fault cause: %1 bin, additional information: %2
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The absolute encoder fault word includes alarm bits that have been set.
Alarm value (r2124, interpret binary):
yyyyxxxx hex: yyyy = supplementary information, xxxx = fault cause
yyyy = 0:
  Bit 0: Frequency exceeded (speed too high).
  Bit 1: Temperature exceeded.
  Bit 2: Control reserve, lighting system exceeded.
  Bit 3: Battery discharged.
  Bit 4: Reference point passed.
yyyy = 1:
  Bit 0: Signal amplitude outside the control range.
  Bit 1: Error multturn interface
  Bit 2: Internal data error (singleturn/multiturn not with single steps).
  Bit 3: Error EEPROM interface.
  Bit 4: SAR converter error.
  Bit 5: Fault for the register data transfer.
  Bit 6: Internal error identified at the error pin (nErr).
  Bit 7: Temperature threshold exceeded or fallen below.
Remedy: Replace encoder.
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33412 (F, N) Encoder 3: Error bit set in the serial protocol

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The encoder sends a set error bit via the serial protocol.
Alarm value (r2124, interpret binary):
Bit 0: Fault bit in the position protocol.
Bit 1: Alarm bit in the position protocol.
Remedy: - carry out a POWER ON (power off/on) for all components.
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace encoder.
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### A33414 (F, N) Encoder 3: Amplitude error track C or D (C² + D²)

**Message value:**
C track: %1, D track: %2

**Drive object:**
VECTOR_G

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
The amplitude (C² + D²) of track C or D of the encoder or from the Hall signals, is not within the tolerance bandwidth.

Alarm value (r2124, interpret hexadecimal):
- yyyy = Signal level, track D (16 bits with sign).
- xxxx = Signal level, track C (16 bits with sign).

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV ±25%/+20 %).
The response thresholds are < 230 mV (observe the frequency response of the encoder) and > 750 mV.
A signal level of 500 mV peak value corresponds to the numerical value 5333 hex = 21299 dec.

Note:
If the amplitude is not within the tolerance bandwidth, then it cannot be used to initialize the start position.

**Remedy:**
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- check the Hall sensor box

**Reaction upon F:**
NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

**Acknowl. upon F:**
IMMEDIATELY

**Reaction upon N:**
NONE

**Acknowl. upon N:**
NONE

---

### A33415 (F, N) Encoder 3: Amplitude alarm track A or B (A² + B²)

**Message value:**
Amplitude: %1, Angle: %2

**Drive object:**
VECTOR_G

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
The amplitude (root of A² + B²) for encoder 3 exceeds the permissible tolerance.

Alarm value (r2124, interpret hexadecimal):
- yyyy = Angle
- xxxx = Amplitude, i.e. root from A² + B² (16 bits without sign)

The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV ±25%/+20 %).
The response threshold is < 230 mV (observe the frequency response of the encoder).
A signal level of 500 mV peak value corresponds to the numerical value 299A hex = 10650 dec.
The angle 0 ... FFFF hex corresponds to 0 ... 360 degrees of the fine position. Zero degrees is present at the negative zero crossover of track B.

Note for sensors modules for resolvers (e.g. SMC10):
The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is < 1414 mV (1.0 Vrms).
A signal level of 2900 mV peak value corresponds to the numerical value 3333 hex = 13107 dec.

Note:
The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.

**Remedy:**
- check the speed range, frequency characteristic (amplitude characteristic) of the measuring equipment is not sufficient for the speed range.
- check that the encoder cables and shielding are routed in compliance with EMC.
- check the plug connections
- replace the encoder or encoder cable
- check the Sensor Module (e.g. contacts).
- if the coding disk is soiled or the lighting aged, replace the encoder.

**Reaction upon F:**
NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

**Acknowl. upon F:**
IMMEDIATELY

**Reaction upon N:**
NONE

**Acknowl. upon N:**
NONE
<table>
<thead>
<tr>
<th>A33418 (F, N)</th>
<th>Encoder 3: Speed difference per sampling rate exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>For an HTL/TTL encoder, the speed difference between two sampling cycles has exceeded the value in p0492. The change to the averaged speed actual value - if applicable - is monitored in the current controller sampling time. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting. See also: p0492</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check the tachometer feeder cable for interruptions. - check the grounding of the tachometer shielding. - if required, increase the setting of p0492.</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
</tr>
<tr>
<td><strong>Acknowl. upon F:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A33419 (F, N)</th>
<th>Encoder 3: Track A or B outside tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The amplitude/phase/offset correction for track A or B is at the limit. Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27 Phase: &lt;84 degrees or &gt;96 degrees SMC20: Offset correction: +/-140 mV SMC10: Offset correction: +/-650 mV Alarm value (r2124, interpret hexadecimal): xxxxx1: Minimum of the offset correction, track B xxxx2: Maximum of the offset correction, track B xxx1x: Minimum of the offset correction, track A xxx2x: Maximum of the offset correction, track A x1xx: Minimum of the amplitude correction, track B/A x2xx: Maximum of the amplitude correction, track B/A x1xxx: Minimum of the phase error correction x2xxx: Maximum of the phase error correction 1xxxx: Minimum of the cubic correction 2xxxx: Maximum of the cubic correction</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders). - check the plug connections (also the transition resistance). - check the encoder signals. - replace the encoder or encoder cable</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)</td>
</tr>
<tr>
<td><strong>Acknowl. upon F:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A33421 (F, N)</th>
<th>Encoder 3: Coarse position error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>For the actual value sensing, an error was detected. As a result of this error, it must be assumed that the actual value sensing supplies an incorrect coarse position.</td>
</tr>
</tbody>
</table>
Alarm value (r2124, interpret decimal):
3: The absolute position of the serial protocol and track A/B differ by half an encoder pulse. The absolute position must have its zero position in the quadrants in which both tracks are negative. In the case of a fault, the position can be incorrect by one encoder pulse.

Remedy:
- Re alarm value = 3:
- For a standard encoder with cable, contact the manufacturer where relevant.
- correct the assignment of the tracks to the position value that is serially transferred. To do this, the two tracks must be connected, inverted, at the Sensor Module (interchange A with A* and B with B*) or, for a programmable encoder, check the zero offset of the position.

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33422 (F, N) Encoder 3: Pulses per revolution square-wave encoder outside tolerance bandwidth

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The measured zero mark distance does not correspond to the parameterized zero mark distance.
This alarm is triggered with active square-wave encoder PPR correction and re-parameterized fault 31131 if the accumulator contains larger values than p4683 or p4684.
The zero mark distance for zero mark monitoring is set in p0425 (rotary encoder).

Alarm value (r2124, interpret decimal):
accumulated differential pulses in encoder pulses.

Remedy:
- check that the encoder cables are routed in compliance with EMC.
- check the plug connections
- check the encoder type (encoder with equidistant zero marks).
- adapt the parameter for the distance between zero marks (p0424, p0425).
- replace the encoder or encoder cable

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33429 (F, N) Encoder 3: Position difference, hall sensor/track C/D and A/B too large

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The error for track C/D is greater than +/-15 ° mechanical or +/-60 ° electrical or the error for the Hall signals is greater than +/-60 ° electrical.
One period of track C/D corresponds to 360 ° mechanical.
One period of the Hall signal corresponds to 360 ° electrical.
The monitoring responds if, for example, Hall sensors are connected as equivalent for the C/D tracks with the incorrect rotational sense or supply values that are not accurate enough.

Alarm value (r2124, interpret decimal):
For track C/D, the following applies:
Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).
For Hall signals, the following applies:
Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).

Remedy:
- track C or D not connected.
- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.
- check that the encoder cables are routed in compliance with EMC.
- check the adjustment of the Hall sensor.

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Faults and alarms

List of faults and alarms

---

A33431 (F, N)  Encoder 3: Deviation, position incremental/absolute too large

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** When the zero pulse is passed, a deviation in the incremental position was detected. For equidistant zero marks, the following applies:
  - The first zero mark passed supplies the reference point for all subsequent checks. The other zero marks must have n times the distance referred to the first zero mark.
  - The first zero mark pair supplies the reference point for all subsequent checks. The other zero mark pairs must have the expected distance to the first zero mark pair.
- **Alarm value (r2124, interpret decimal):** Deviation in quadrants (1 pulse = 4 quadrants).
- **Remedy:**
  - check that the encoder cables are routed in compliance with EMC.
  - check the plug connections
  - replace the encoder or encoder cable
  - clean coding disk or remove strong magnetic fields.
- **Reaction upon F:** NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE

A33432 (F, N)  Encoder 3: Rotor position adaptation corrects deviation

- **Message value:** %1
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** For track A/B, pulses have been lost or too many have been counted. These pulses are presently being corrected. The sign designates the direction of motion when detecting the zero mark distance.
- **Alarm value (r2124, interpret decimal):** Last measured deviation of zero mark in increments (4 increments = 1 encoder pulse).
- **Remedy:**
  - check that the encoder cables are routed in compliance with EMC.
  - check the plug connections
  - replace the encoder or encoder cable
  - check encoder limit frequency.
  - adapt the parameter for the distance between zero marks (p0424, p0425).
- **Reaction upon F:** NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE

A33442 (F, N)  Encoder 3: Battery voltage pre-alarm

- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** When switched-off, the encoder uses a battery to back up the multiturn information. The battery voltage is no longer sufficient to check the multiturn information.
- **Remedy:** Replace battery.
- **Reaction upon F:** NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE
### A33443 (F, N) Encoder 3: Unipolar CD signal level outside specification

**Message value:** Fault cause: %1 bin  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The unipolar level (CP/CN or DP/DN) for encoder 3 is outside the permissible tolerance.  
Alarm value (r2124, interpret binary):  
Bit 0 = 1: Either CP or CN outside the tolerance.  
Bit 16 = 1: Either DP or DN outside the tolerance.  
The unipolar nominal signal level of the encoder must lie in the range 2500 mV +/- 500 mV. The response thresholds are < 1700 mV and > 3300 mV.  
**Note:** The signal level is not evaluated unless the following conditions are satisfied:  
- Sensor Module properties available (r0459.31 = 1).  
- Monitoring active (p0437.31 = 1).  
**Remedy:**  
- check that the encoder cables and shielding are routed in compliance with EMC.  
- check the plug connections and contacts of the encoder cable.  
- are the C/D tracks connected correctly (have the signal lines CP and CN or DP and DN been interchanged)?  
- replace the encoder cable.  
**Reaction upon F:** NONE (IASC/DCCBRK, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

---

### A33460 (N) Encoder 3: Analog sensor channel A failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside measuring range set in p4673.  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Remedy:**  
Re alarm value = 1:  
- check the output voltage of the analog sensor.  
Re alarm value = 2:  
- check the voltage setting for each encoder period (p4673).  
Re alarm value = 3:  
- check the range limit setting and increase it if necessary (p4676).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

---

### A33461 (N) Encoder 3: Analog sensor channel B failed

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The input voltage of the analog sensor is outside the permissible limits.  
Alarm value (r2124, interpret decimal):  
1: Input voltage outside detectable measuring range.  
2: Input voltage outside the measuring range set in (p4675).  
3: The absolute value of the input voltage has exceeded the range limit (p4676).  
**Remedy:**  
Re alarm value = 1:  
- check the output voltage of the analog sensor.  
Re alarm value = 2:  
- check the voltage setting for each encoder period (p4675).
Faults and alarms

List of faults and alarms

Re alarm value = 3:
- check the range limit setting and increase it if necessary (p4676).
Reaction upon N: NONE
Acknowl. upon N: NONE

A33462 (N) Encoder 3: Analog sensor, no channel active
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Channel A and B are not activated for the analog sensor.
Remedy: - activate channel A and/or channel B (p4670).
- check the encoder configuration (p0404.17).
See also: p4670 (Analog sensor configuration)
Reaction upon N: NONE
Acknowl. upon N: NONE

A33463 (N) Encoder 3: Analog sensor position value exceeds limit value
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.
Alarm value (r2124, interpret decimal):
1: Position value from the LVDT sensor.
2: Position value from the encoder characteristic.
Remedy: Re alarm value = 1:
- Check the LVDT ratio (p4678).
- check the reference signal connection at track B.
Re alarm value = 2:
- check the coefficients of the characteristic (p4663 ... p4666).
Reaction upon N: NONE
Acknowl. upon N: NONE

A33470 (F, N) Encoder 3: Soiling detected
Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: In the case of the alternative encoder system interface on the Sensor Module Cabinet 30 (SMC30), encoder soiling
is signaled via a 0 signal at terminal X521.7.
Remedy: - check the plug connections
- replace the encoder or encoder cable
Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33500 (N, A) Encoder 3: Position tracking traversing range exceeded
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: For a configured linear axis without modulo correction, the drive/encoder has exceeded the maximum possible
traversing range. The value should be read in p0412 and interpreted as the number of motor revolutions.
For p0411.0 = 1, the maximum traversing range for the configured linear axis is defined to be 64x (+/ 32x) of p0421. For p0411.3 = 1, the maximum traversing range for the configured linear axis is pre-set (default value) to the highest possible value and is +/-p0412/2 (rounded off to complete revolutions). The highest possible value depends on the pulse number (p0408) and the fine resolution (p0419).

Remedy: The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).

The fault should then be acknowledged and the absolute encoder adjusted.

F33501 (N, A) Encoder 3: Position tracking encoder position outside tolerance window

Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: When powered down, the drive/encoder was moved through a distance greater than was parameterized in the tolerance window. It is possible that there is no longer any reference between the mechanical system and encoder. Fault value (r0949, interpret decimal):
Deviation (difference) to the last encoder position in increments of the absolute value.
The sign designates the traversing direction.
Note: The deviation (difference) found is also displayed in r0477.
See also: p0413 (Measuring gear, position tracking tolerance window), r0477 (Measuring gear, position difference)
Remedy: Reset the position tracking as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).
See also: p0010

F33502 (N, A) Encoder 3: Encoder with measuring gear, without valid signals

Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The encoder with measuring gear no longer provides any valid signals.
Remedy: It must be ensured that all of the encoders, with mounted measuring gear, provide valid actual values in operation.

F33503 (N, A) Encoder 3: Position tracking cannot be reset

Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The position tracking for the measuring gear cannot be reset.
Faults and alarms

List of faults and alarms

Remedy:
The fault should be resolved as follows:
- select encoder commissioning (p0010 = 4).
- reset the position tracking as follows (p0411.2 = 1).
- de-select encoder commissioning (p0010 = 0).
The fault should then be acknowledged and the absolute encoder adjusted.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A33700 Encoder 3: Effectivity test does not supply the expected value
Message value: Fault cause: %1 bin
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.
Fault value (r0949, interpret binary):
Bit x = 1: Effectivity test x unsuccessful.
Remedy: Replace encoder.

N33800 (F) Encoder 3: Group signal
Message value: -
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: NONE
Cause: The motor encoder has detected at least one fault.
Remedy: Evaluate the other messages that are presently available.
Reaction upon F: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F33801 (N, A) Encoder 3 DRIVE-CLiQ: Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved.
Fault cause: 10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause
Remedy: - check the electrical cabinet design and cable routing for EMC compliance
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33802 (N, A) Encoder 3: Time slice overflow
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred in encoder 3.
Fault value (r0949, interpret hexadecimal):
yx hex: y = function involved (Siemens-internal fault diagnostics), x = time slice involved
  x = 9:
  Time slice overflow of the fast (current controller clock cycle) time slice.
  x = A:
  Time slice overflow of the average time slice.
  x = C:
  Time slice overflow of the slow time slice.
y = 3E7:
  Timeout when waiting for SYNO (e.g. unexpected return to non-cyclic operation).

Remedy: Increase the current controller sampling time
Note: For a current controller sampling time = 31.25 µs, use an SMx20 with order number 6SL3055-0AA00-5xA3.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33804 (N, A) Encoder 3: Checksum error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: POWER ON (IMMEDIATELY)
Cause: A checksum error has occurred when reading-out the program memory on the Sensor Module.
  Fault value (r0949, interpret hexadecimal):
    yyyyxxxx hex
    yyyy: Memory area involved.
    xxxx: Difference between the checksum at POWER ON and the actual checksum.
Remedy: - carry out a POWER ON (power off/on).
  - upgrade firmware to later version (>= V2.6 HF3, >= V4.3 SP2, >= V4.4).
  - check whether the permissible ambient temperature for the component is maintained.
  - replace the Sensor Module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33805 (N, A) Encoder 3: EPROM checksum error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Internal parameter data is corrupted.
  Fault value (r0949, interpret hexadecimal):
    01: EEPROM access error.
    02: Too many blocks in the EEPROM.
Remedy: Replace the module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### F33806 (N, A) Encoder 3: Initialization error

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The encoder was not successfully initialized.  

Fault value (r0949, interpret hexadecimal):  
- Bit 0, 1: Encoder initialization with the motor rotating has failed (deviation involving coarse and fine position in encoder pulses/4).  
- Bit 2: Mid-voltage matching for track A unsuccessful.  
- Bit 3: Mid-voltage matching for track B unsuccessful.  
- Bit 4: Mid-voltage matching for acceleration input unsuccessful.  
- Bit 5: Mid-voltage matching for track safety A unsuccessful.  
- Bit 6: Mid-voltage matching for track safety B unsuccessful.  
- Bit 7: Mid-voltage matching for track C unsuccessful.  
- Bit 8: Mid-voltage matching for track D unsuccessful.  
- Bit 9: Mid-voltage matching for track R unsuccessful.  
- Bit 10: The difference in mid-voltages between A and B is too great (> 0.5 V)  
- Bit 11: The difference in mid-voltages between C and D is too great (> 0.5 V)  
- Bit 12: The difference in mid-voltages between safety A and safety B is too great (> 0.5 V)  
- Bit 13: The difference in mid-voltages between A and safety B is too great (> 0.5 V)  
- Bit 14: The difference in mid-voltages between B and safety A is too great (> 0.3 V)  
- Bit 15: The standard deviation of the calculated mid-voltages is too great (> 0.3 V)  
- Bit 16: Internal fault - fault when reading a register (CAFE)  
- Bit 17: Internal fault - fault when writing a register (CAFE)  
- Bit 18: Internal fault: No mid-voltage matching available  
- Bit 19: Internal error - ADC access error.  
- Bit 20: Internal error - no zero crossover found.  
- Bit 28: Error while initializing the EnDat 2.2 measuring unit.  
- Bit 29: Error when reading out the data from the EnDat 2.2 measuring unit.  
- Bit 30: EEPROM checksum of the EnDat 2.2 measuring unit incorrect.  
- Bit 31: Data of the EnDat 2.2 measuring unit inconsistent.  

**Remedy:**  
- Acknowledge fault.  
- If the fault cannot be acknowledged:  
  - Bits 2 ... 9: Check encoder power supply.  
  - Bits 2 ... 14: Check the corresponding cable.  
  - Bit 15 with no other bits: Check track R, check settings in p0404.  
  - Bit 28: Check the cable between the EnDat 2.2 converter and the measuring unit.  
  - Bit 29 ... 31: Replace the defective measuring unit.  

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F33811 (N, A) Encoder 3: Encoder serial number changed

**Message value:** -  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (NONE, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The encoder serial number has changed. The change is only checked for encoders with serial number (e.g. EnDat encoders).  
  - The encoder was replaced.  

**Note:**  
With closed-loop position control, the serial number is accepted when starting the adjustment (p2507 = 2).  
When the encoder is adjusted (p2507 = 3), the serial number is checked for changes and if required, the adjustment is reset (p2507 = 1).
Proceed as follows to hide serial number monitoring:
- set the following serial numbers for the corresponding Encoder Data Set: p0441 = FF, p0442 = 0, p0443 = 0, p0444 = 0, p0445 = 0.

**Remedy:**
Mechanically adjust the encoder. Accept the new serial number with p0440 = 1.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

---

**F33812 (N, A) Encoder 3: Requested cycle or RX-TX timing not supported**

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A cycle requested from the Control Unit or RX/TX timing is not supported.  
Fault value (r0949, interpret decimal):  
0: Application cycle is not supported.  
1: DRIVE-CLiQ cycle is not supported.  
2: Distance between RX and TX instants in time too low.  
3: TX instant in time too early.

**Remedy:**  
Carry out a POWER ON (power off/on) for all components.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

---

**F33813 Encoder 3: Hardware logic unit failed**

**Message value:** Fault cause: %1 bin  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
**Acknowledge:** PULSE INHIBIT  
**Cause:** The DRIVE-CLiQ encoder fault word supplies fault bits that have been set.  
Fault value (r0949, interpret binary):  
Bit 0: ALU watchdog has responded.  
Bit 1: ALU has detected a sign-of-life error.

**Remedy:**  
Replace encoder.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

---

**F33820 (N, A) Encoder 3 DRIVE-CLiQ: Telegram error**

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned.  
Fault cause:  
1 (= 01 hex):  
Checksum error (CRC error).  
2 (= 02 hex):  
Telegram is shorter than specified in the length byte or in the receive list.  
3 (= 03 hex):  
Telegram is longer than specified in the length byte or in the receive list.  
4 (= 04 hex):  
The length of the receive telegram does not match the receive list.  
5 (= 05 hex):  
The type of the receive telegram does not match the receive list.  
6 (= 06 hex):  
The address of the component in the telegram and in the receive list do not match.  
7 (= 07 hex):  
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE
Faults and alarms

List of faults and alarms

8 (= 08 hex):
No SYNC telegram is expected - but the received telegram is one.

9 (= 09 hex):
The error bit in the receive telegram is set.

16 (= 10 hex):
The receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33835 (N, A) Encoder 3 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder concerned. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33836 (N, A) Encoder 3 DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000yyxx hex: yy = component number, xx = error cause
Remedy:
Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
### Faults and alarms

#### List of faults and alarms

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<th>Description</th>
<th>Message Value</th>
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<th>Acknowledge</th>
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<tbody>
<tr>
<td>F33837 (N, A)</td>
<td>Encoder 3 DRIVE-CLiQ: Component fault</td>
<td>Component number: %1, fault cause: %2</td>
<td>VECTOR_G</td>
<td>OFF1</td>
<td>IMMEDIATELY</td>
<td>Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded. Fault cause: 32 (= 20 hex); Error in the telegram header. 35 (= 23 hex); Receive error: The telegram buffer memory contains an error. 66 (= 42 hex); Send error: The telegram buffer memory contains an error. 67 (= 43 hex); Send error: The telegram buffer memory contains an error. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
<td>- check the DRIVE-CLiQ wiring (interrupted cable, contacts,...). - check the electrical cabinet design and cable routing for EMC compliance - if required, use another DRIVE-CLiQ socket (p9904). - replace the component involved.</td>
</tr>
<tr>
<td>F33845 (N, A)</td>
<td>Encoder 3 DRIVE-CLiQ: Cyclic data transfer error</td>
<td>Component number: %1, fault cause: %2</td>
<td>VECTOR_G</td>
<td>OFF1</td>
<td>IMMEDIATELY</td>
<td>A DRIVE-CLiQ communication error has occurred from the Control Unit to the encoder involved. Fault cause: 11 (= 0B hex); Synchronization error during alternating cyclic data transfer. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
<td>Carry out a POWER ON. See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
</tr>
<tr>
<td>F33850 (N, A)</td>
<td>Encoder 3: Encoder evaluation, internal software error</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF1</td>
<td>POWER ON</td>
<td>An internal software error has occurred in the Sensor Module of encoder 3. Fault value (r0949, interpret decimal): 1: Background time slice is blocked. 2: Checksum over the code memory is not OK.</td>
<td></td>
</tr>
</tbody>
</table>
Faults and alarms

List of faults and alarms

10000: OEM memory of the EnDat encoder contains data that cannot be interpreted.
11000 ... 11499: Descriptive data from EEPROM incorrect.
11500 ... 11899: Calibration data from EEPROM incorrect.
11900 ... 11999: Configuration data from EEPROM incorrect.
12000 ... 12008: Communication with AD converter faulted.
16000: DRIVE-CLiQ encoder initialization application error.
16001: DRIVE-CLiQ encoder initialization ALU error.
16002: DRIVE-CLiQ encoder HISI / SISI initialization error.
16003: DRIVE-CLiQ encoder safety initialization error.
16004: DRIVE-CLiQ encoder internal system error.

Remedy:
- replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact the Hotline.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33851 (N, A) Encoder 3 DRIVE-CLiQ (CU): Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
Upgrade the firmware of the component involved.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33860 (N, A) Encoder 3 DRIVE-CLiQ (CU): Telegram error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit. Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The error bit in the receive telegram is set.
List of faults and alarms

16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33875 (N, A) Encoder 3 DRIVE-CLiQ (CU): Supply voltage failed
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33885 (N, A) Encoder 3 DRIVE-CLiQ (CU): Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
The nodes do not send and receive in synchronism.
Faults and alarms

List of faults and alarms

Fault cause:
26 (= 1A hex): Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex): The cyclic telegram has not been received.
34 (= 22 hex): Timeout in the telegram receive list.
64 (= 40 hex): Timeout in the telegram send list.
98 (= 62 hex): Error at the transition to cyclic operation.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.

See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33886 (N, A) Encoder 3 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit. Data were not able to be sent.
Fault cause:
65 (= 41 hex): Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy: Carry out a POWER ON.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F33887 (N, A) Encoder 3 DRIVE-CLiQ (CU): Component fault
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component involved (Sensor Module for encoder 3). Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex): Error in the telegram header.
96 (= 60 hex): Response received too late during runtime measurement.
97 (= 61 hex): Time taken to exchange characteristic data too long.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F33895 (N, A) Encoder 3 DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 3) involved to the Control Unit.
Fault cause: 11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F33896 (N, A) Encoder 3 DRIVE-CLiQ (CU): Inconsistent component properties
Message value: Component number: %1
Drive object: VECTOR_G
Reaction: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (Sensor Module for encoder 3), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.

Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).
### List of faults and alarms

#### F33899 (N, A) Encoder 3: Unknown fault

**Message value:** New message: %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** A fault occurred on the Sensor Module for encoder 3 that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit.  
**Fault value (r0949, interpret decimal):** Fault number.  
**Note:** If required, the significance of this new fault can be read about in a more recent description of the Control Unit.  
**Remedy:**  - replace the firmware on the Sensor Module by an older firmware version (r0148).  - upgrade the firmware on the Control Unit (r0018).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** IMMEDIATELY

#### A33902 (F, N) Encoder 3: SPI-BUS error occurred

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Error when operating the internal SPI bus.  
**Fault value (r0949, interpret hexadecimal):** Only for internal Siemens troubleshooting.  
**Remedy:**  - replace the Sensor Module.  - if required, upgrade the firmware in the Sensor Module.  - contact the Hotline.  
**Reaction upon F:** NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

#### A33903 (F, N) Encoder 3: I2C-BUS error occurred

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** Error when operating the internal I2C bus.  
**Fault value (r0949, interpret hexadecimal):** Only for internal Siemens troubleshooting.  
**Remedy:**  - replace the Sensor Module.  - if required, upgrade the firmware in the Sensor Module.  - contact the Hotline.  
**Reaction upon F:** NONE (ENCODER, IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY  
**Reaction upon N:** IMMEDIATELY  
**Acknowl. upon N:** IMMEDIATELY
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| F33905    | Encoder 3: Parameterization error                | %1, supplementary information: %2 | VECTOR_G     | OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2) | IMMEDIATELY     | A parameter of encoder 3 was detected as being incorrect. It is possible that the parameterized encoder type does not match the connected encoder. The parameter involved can be determined as follows:  
- determine the parameter number using the fault value (r0949).  
- determine the parameter index (p0187).  
Fault value (r0949, interpret decimal):  
%1 = supplementary information, %2 = parameter  
%2 = 421:  
For an EnDat/SSI encoder, the absolute position in the protocol must be less than or equal to 30 bits.  
%1 = 0:  
No information available.  
%1 = 1:  
The component does not support HTL level (p0405.1 = 0) combined with track monitoring A/B <> -A/B (p0405.2 = 1).  
%1 = 2:  
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please start a new encoder identification.  
%1 = 3:  
A code number for an identified encoder has been entered into p0400, however, no identification was carried out. Please select a listed encoder in p0400 with a code number < 10000.  
%1 = 4:  
This component does not support SSI encoders (p0404.9 = 1) without track A/B.  
%1 = 5:  
For SQW encoder, value in p4686 greater than in p0425.  
%1 = 6:  
DRIVE-CLiQ encoder cannot be used with this firmware version.  
%1 = 7:  
For an SQW encoder, the Xact1 correction (p0437.2) is only permitted with equidistant zero marks.  
%1 = 8:  
The motor pole pair width is not supported by the linear scale being used.  
%1 = 9:  
The length of the position in the EnDat protocol may be a maximum of 32 bits.  
%1 = 10:  
The connected encoder is not supported.  
- check whether the connected encoder type matches the encoder that has been parameterized.  
- correct the parameter specified by the fault value (r0949) and p0187.  
- re parameter number = 314;  
- check the pole pair number and measuring gear ratio. The quotient of the "pole pair number" divided by the "measuring gear ratio" must be less than or equal to 1000 ((r0313 * p0433) / p0432 <= 1000). |
| F33912    | Encoder 3: Device combination is not permissible  | %1            | VECTOR_G     | ENCODER (IASC/DCBRAKE, NONE)      | PULSE INHIBIT   | The selected device combination is not supported.  
Fault value (r0949, interpret decimal):  
1003: The connected measuring unit cannot be operated with the EnDat 2.2 converter. For instance, the measuring unit has a pulse number/resolution of 2^n.  
1005: The type of measuring unit (incremental) is not supported by the EnDat 2.2 converter. |
Faults and alarms

List of faults and alarms

1006:
The maximum duration (31.25 µs) of the EnDat transfer was exceeded.

2001:
The set combination of current controller cycle, DP cycle and Safety cycle is not supported by the EnDat 2.2 converter.

2002:
The resolution of the linear measuring unit does not match the pole pair width of the linear motor

Remedy:
Re fault value = 1003, 1005, 1006:
- Use a measuring unit that is permissible.
For fault value = 2001:
- Set a permissible cycle combination (if required, use standard settings).
For fault value = 2002:
- Use a measuring unit with a lower resolution (p0422).

A33915 (F, N) Encoder 3: Configuration error
Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The configuration for encoder 3 is incorrect.
Alarm value (r2124, interpret decimal):
1: Re-parameterization between fault/alarm is not permissible.
419: When the fine resolution Gx_XIST2 is configured, the encoder identifies a maximum possible absolute position actual value (r0483) that can no longer be represented within 32 bits.

Remedy:
Re alarm value = 1:
No re-parameterization between fault/alarm.
Re alarm value = 419:
Reduce the fine resolution (p0419) or deactivate the monitoring (p0437.25), if the complete multiturn range is not required.

Reaction upon F: NONE (IASC/DCBRAKE)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F33916 (N, A) Encoder 3: Parameterization fault
Message value: Parameter: %1, supplementary information: %2
Drive object: VECTOR_G
Reaction: OFF1 (IASC/DCBRAKE, NONE, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: A parameter of encoder 3 was detected as being incorrect.
It is possible that the parameterized encoder type does not match the connected encoder.
The parameter involved can be determined as follows:
- determine the parameter number using the fault value (r0949).
- determine the parameter index (p0187).
Fault value (r0949, interpret decimal):
Parameter number.
Note:
This fault is only output for encoders where r0404.10 = 1 or r0404.11 = 1. It corresponds to A33905 with encoders where r0404.10 = 0 and r0404.11 = 0.

Remedy:
- check whether the connected encoder type matches the encoder that has been parameterized.
- correct the parameter specified by the fault value (r0949) and p0187.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
A33920 (F, N) Encoder 3: Temperature sensor fault

Message value: Fault cause: %1, channel number: %2
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.
Fault cause:
1 (= 01 hex):
Wire breakage or sensor not connected (KTY: R > 1630 Ohm).
2 (= 02 hex):
Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).
Additional values:
Only for internal Siemens troubleshooting.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
000Oyxx hex: yy = channel number, xx = error cause

Remedy:
- check that the encoder cable is the correct type and is correctly connected.
- check the temperature sensor selection in p0600 to p0603.
- replace the Sensor Module (hardware defect or incorrect calibration data).

Reaction upon F: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A33930 (N) Encoder 3: Data logger has saved data

Message value: -
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: For the activated function "Data logger" (p0437.0 = 1) a fault has occurred with the Sensor Module. This alarm indicates that the diagnostics data corresponding to the fault was saved on the memory card.
The diagnostics data is saved in the following folder:
/USER/SINAMICS/DATA/SMTRC00.BIN
... /USER/SINAMICS/DATA/SMTRC07.BIN
/USER/SINAMICS/DATA/SMTRCIDX.TXT
The following information is contained in the TXT file:
- Display of the last written BIN file.
- Number of write operations that are still possible (from 10000 downwards).
Note:
Only Siemens can evaluate the BIN files.

Remedy:
Not necessary.
The alarm disappears automatically.
The data logger is ready to record the next fault case.

Reaction upon N: NONE
Acknowl. upon N: NONE

A33940 (F, N) Encoder 3: Spindle sensor S1 voltage incorrect

Message value: %1
Drive object: VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: The voltage of analog sensor S1 is outside the permissible range.
Fault value (r0949, interpret decimal):
Signal level from sensor S1.
Note:
A signal level of 500 mV corresponds to the numerical value 500 dec.
### F33950  Encoder 3: Internal software error

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>ENCODER (OFF2)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>POWER ON</td>
</tr>
<tr>
<td>Cause</td>
<td>An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.</td>
</tr>
<tr>
<td>Remedy</td>
<td>- If necessary, upgrade the firmware in the Sensor Module to a later version. - contact the Hotline.</td>
</tr>
</tbody>
</table>

### A33999 (F, N)  Encoder 3: Unknown alarm

<table>
<thead>
<tr>
<th>Message value</th>
<th>New message: %1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>A alarm has occurred on the Sensor Module for encoder 3 that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Alarm value (r2124, interpret decimal): Alarm number. Note: If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.</td>
</tr>
<tr>
<td>Remedy</td>
<td>- replace the firmware on the Sensor Module by an older firmware version (r0148). - upgrade the firmware on the Control Unit (r0018).</td>
</tr>
</tbody>
</table>

### F34207 (N, A)  VSM: Temperature fault threshold exceeded

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object</td>
<td>B_INF, VECTOR_G</td>
</tr>
<tr>
<td>Reaction</td>
<td>Infeed: OFF2 (NONE, OFF1) Vector: NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause</td>
<td>The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3668). Note: This fault can only be initiated if the temperature evaluation was activated (p3665 = 2 for a KTY sensor or p3665 = 1 for a PTC sensor). Fault value (r0949, interpret decimal): yyyy dec: yy: Component number of the component which detected the fault.</td>
</tr>
<tr>
<td>Remedy</td>
<td>- check the fan. - reduce the power.</td>
</tr>
</tbody>
</table>

### Remedy:
- Check the clamped tool.
- Check the tolerance and if required, adapt (p5040).
- Check the thresholds and if required, adapt (p5041).
- Check analog sensor S1 and connections.
**A34211 (F, N)**  
**VSM: Temperature alarm threshold exceeded**  
**Message value:** %1  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The temperature (r3666) measured using the Voltage Sensing Module (VSM) has exceeded the threshold value (p3667).  
Alarm value (r2124, interpret decimal):  
The hundred-thousands and ten-thousands position specifies the component number of the VSM which detected the fault.  
**Remedy:**  
- check the fan.  
- reduce the power.  
**Reaction upon F:**  
Infeed: NONE (OFF1, OFF2)  
Vector: NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

**N34800 (F)**  
**VSM: Group signal**  
**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2, OFF3)  
**Acknowledge:** NONE  
**Cause:** The Voltage Sensing Module (VSM) has detected at least one fault.  
**Remedy:** Evaluates other actual messages.  
**Reaction upon F:**  
Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2, OFF3)  
**Acknowl. upon F:** IMMEDIATELY

**F34801**  
**VSM DRIVE-CLiQ: Sign-of-life missing**  
**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module (VSM).  
Fault cause:  
10 (= 0A hex):  
The sign-of-life bit in the receive telegram is not set.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- check the DRIVE-CLiQ connection.  
- replace the Voltage Sensing Module (VSM).
Faults and alarms

List of faults and alarms

Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ connection.
- replace the component involved.

F34802 VSM: Time slice overflow

Message value: -
Drive object: B_INF, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A time slice overflow has occurred on the Voltage Sensing Module.
Remedy:
- replace the Voltage Sensing Module.

F34803 VSM: Memory test

Message value: -
Drive object: B_INF, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error has occurred during the memory test on the Voltage Sensing Module.
Remedy:
- check whether the permissible ambient temperature for the Voltage Sensing Module is being maintained.
- replace the Voltage Sensing Module.

F34804 (N, A) VSM: CRC

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: A checksum error has occurred when reading-out the program memory on the Voltage Sensing Module (VSM).
Remedy:
- check whether the permissible ambient temperature for the component is maintained.
- replace the Voltage Sensing Module.

Reaction upon N: NONE
Acknow. upon N: NONE
Reaction upon A: NONE
Acknow. upon A: NONE

F34805 VSM: EPROM checksum error

Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: Internal parameter data is corrupted.
Fault value (r0949, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy:
- check whether the permissible ambient temperature for the component is maintained.
- replace the Voltage Sensing Module (VSM).
**F34806**

**VSM: Initialization**

**Message value:** -

**Drive object:** B_INF, VECTOR_G

**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** For the Voltage Sensing Module (VSM), a fault has occurred while initializing.

**Remedy:** Replace the Voltage Sensing Module.

---

**A34807 (F, N)**

**VSM: Sequence control time monitoring**

**Message value:** -

**Drive object:** B_INF, VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** Error, timeout in the sequence control on the Voltage Sensing Module (VSM).

**Remedy:** Replace the Voltage Sensing Module.

**Reaction upon F:** NONE

**Acknowl. upon F:** IMMEDIATELY (POWER ON)

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

---

**F34820**

**VSM DRIVE-CLiQ: Telegram error**

**Message value:** Component number: %1, fault cause: %2

**Drive object:** B_INF, VECTOR_G

**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2)

**Acknowledge:** IMMEDIATELY

**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module involved.  
Fault cause:  
1 (= 01 hex): Checksum error (CRC error).  
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.  
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.  
4 (= 04 hex): The length of the receive telegram does not match the receive list.  
5 (= 05 hex): The type of the receive telegram does not match the receive list.  
6 (= 06 hex): The address of the component in the telegram and in the receive list do not match.  
7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram.  
8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one.  
9 (= 09 hex): The error bit in the receive telegram is set.  
16 (= 10 hex): The receive telegram is too early.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxxy hex: yy = component number, xx = error cause

**Remedy:**  
- carry out a POWER ON (power off/on).  
- check the electrical cabinet design and cable routing for EMC compliance  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).  
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
Faults and alarms

List of faults and alarms

F34835  VSM DRIVE-CLiQ: Cyclic data transfer error
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF2 (NONE, OFF1)
           Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause:  A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module involved.
The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):  The cyclic telegram has not been received.
34 (= 22 hex):  Timeout in the telegram receive list.
64 (= 40 hex):  Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON.
- replace the component involved.

F34836  VSM DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF2 (NONE, OFF1)
           Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause:  A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module. Data were not able to be sent.
Fault cause:
65 (= 41 hex):  Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
Carry out a POWER ON.

F34837  VSM DRIVE-CLiQ: Component fault
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, VECTOR_G
Reaction:  Infeed: OFF2 (NONE, OFF1)
           Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause:  Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):  Error in the telegram header.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
## List of faults and alarms

- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

### F34845  VSM DRIVE-CLiQ: Cyclic data transfer error

| Message value | Component number: %1, fault cause: %2 |
| Drive object  | B_INF, VECTOR_G                        |
| Reaction      | Infeed: OFF2 (NONE, OFF1) Vector: NONE (OFF1, OFF2) |
| Acknowledge   | IMMEDIATELY                             |
| Cause         | A DRIVE-CLiQ communications error has occurred from the Control Unit to the Voltage Sensing Module (VSM). Fault cause: 11 (= 0B hex): Synchronization error during alternating cyclic data transfer. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause |
| Remedy        | Carry out a POWER ON. See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave) |

### F34850  VSM: Internal software error

| Message value | %1 |
| Drive object  | B_INF, VECTOR_G                        |
| Reaction      | Infeed: OFF1 (NONE, OFF2) Vector: OFF1 (NONE, OFF2, OFF3) |
| Acknowledge   | POWER ON                                |
| Cause         | An internal software error in the Voltage Sensing Module (VSM) has occurred. Fault value (r0949, interpret decimal): 1: Background time slice is blocked. 2: Checksum over the code memory is not OK. |
| Remedy        | - replace the Voltage Sensing Module (VSM). - if required, upgrade the firmware in the Voltage Sensing Module. - contact the Hotline. |

### F34851  VSM DRIVE-CLiQ (CU): Sign-of-life missing

| Message value | Component number: %1, fault cause: %2 |
| Drive object  | B_INF, TM150, TM31, VECTOR_G           |
| Reaction      | Infeed: OFF2 (NONE, OFF1) Vector: NONE (OFF1, OFF2) |
| Acknowledge   | IMMEDIATELY                             |
| Cause         | A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit. Fault cause: 10 (= 0A hex): The sign-of-life bit in the receive telegram is not set. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause |
| Remedy        | Upgrade the firmware of the component involved. |

### F34860  VSM DRIVE-CLiQ (CU): Telegram error

| Message value | Component number: %1, fault cause: %2 |
| Drive object  | B_INF, TM150, TM31, VECTOR_G           |
| Reaction      | Infeed: OFF2 (NONE, OFF1) Vector: NONE (OFF1, OFF2) |
| Acknowledge   | IMMEDIATELY                             |
| Cause         | A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit. |

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Faults and alarms

List of faults and alarms

Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The error bit in the receive telegram is set.
16 (= 10 hex):
The receive telegram is too early.
17 (= 11 hex):
CRC error and the receive telegram is too early.
18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.
21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.
22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance.
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F34875 VSM DRIVE-CLiQ (CU): Supply voltage failed

Message value:
Component number: %1, fault cause: %2

Drive object:
B_INF, TM150, TM31, VECTOR_G

Reaction: OFF2

Acknowledge:
IMMEDIATELY

Cause:
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.
### F34885 VSM DRIVE-CLiQ (CU): Cyclic data transfer error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, TM150, TM31, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.  
The nodes do not send and receive in synchronism.  
Fault cause:  
26 (= 1A hex): Sign-of-life bit in the receive telegram not set and the receive telegram is too early.  
33 (= 21 hex): The cyclic telegram has not been received.  
34 (= 22 hex): Timeout in the telegram receive list.  
64 (= 40 hex): Timeout in the telegram send list.  
98 (= 62 hex): Error at the transition to cyclic operation.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- check the power supply voltage of the component involved.  
- carry out a POWER ON.  
- replace the component involved.  
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

### F34886 VSM DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, TM150, TM31, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.  
Data were not able to be sent.  
Fault cause:  
65 (= 41 hex): Telegram type does not match send list.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- carry out a POWER ON.

### F34887 VSM DRIVE-CLiQ (CU): Component fault

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, TM150, TM31, VECTOR_G  
**Reaction:** Infeed: OFF2 (NONE, OFF1)  
Vector: NONE (OFF1, OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** Fault detected on the DRIVE-CLiQ component (Voltage Sensing Module) involved. Faulty hardware cannot be excluded.  
Fault cause:  
32 (= 20 hex): Error in the telegram header.  
Faults and alarms

List of faults and alarms

66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F34895 VSM DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the Voltage Sensing Module involved (VSM) to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F34896 VSM DRIVE-CLiQ (CU): Inconsistent component properties
Message value: Component number: %1
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (Voltage Sensing Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F34899 (N, A) VSM: Unknown fault
Message value: New message: %1
Drive object: B_INF, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault occurred on the Voltage Sensing Module that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.

**Remedy:**
- replace the firmware on the Voltage Sensing Module by an older firmware version (r0158).
- upgrade the firmware on the Control Unit (r0018).

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

**A34903 (F, N) VSM: I2C bus error occurred**
**Message value:**
**Drive object:** B_INF
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** An error has occurred when accessing the module-internal I2C bus.
**Remedy:** Replace the Voltage Sensing Module (VSM).
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
**Vector:** NONE
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

**A34903 (F, N) VSM: I2C bus error occurred**
**Message value:**
**Drive object:** VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** An error has occurred when accessing the module-internal I2C bus.
**Remedy:** Replace the Terminal Module.
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
**Vector:** NONE
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

**A34904 (F, N) VSM: EEPROM**
**Message value:**
**Drive object:** B_INF, VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** An error has occurred accessing the non-volatile memory on the Terminal Module.
**Remedy:** Replace the Voltage Sensing Module (VSM).
**Reaction upon F:** Infeed: NONE (OFF1, OFF2)
**Vector:** NONE
**Acknowl. upon F:** IMMEDIATELY (POWER ON)
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
A34905 (F, N)  VSM: Parameter access
Message value: -
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The Control Unit attempted to write an illegal parameter value to the Voltage Sensing Module (VSM).
Remedy: - check whether the firmware version of the VSM (r0158) matches the firmware version of Control Unit (r0018).
- if required, replace the Voltage Sensing Module.
Note: The firmware versions that match each other are in the readme.txt file on the memory card.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A34920 (F, N)  VSM: Temperature sensor fault
Message value: %1
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected (KTY: R > 1630 Ohm).
2: Measured resistance too low (PTC: R < 20 Ohm, KTY: R < 50 Ohm).
Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F34950  VSM: Internal software error
Message value: %1
Drive object: VECTOR_G
Reaction: OFF2
Acknowledge: POWER ON
Cause: An internal software error in the Voltage Sensing Module (VSM) has occurred.
Fault value (r0949, interpret decimal):
Information about the fault source.
Only for internal Siemens troubleshooting.
Remedy: - If necessary, upgrade the firmware in the Voltage Sensing Module to a later version.
- contact the Hotline.

A34999 (F, N)  VSM: Unknown alarm
Message value: New message: %1
Drive object: B_INF, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A fault occurred on the Voltage Sensing Module (VSM) an alarm has occurred that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Alarm value (r2124, interpret decimal):
Alarm number.
List of faults and alarms

Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.

Remedy:
- replace the firmware on the Voltage Sensing Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).

Reaction upon F:
Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY (POWER ON)
Action upon N: NONE

F35000 TM54F: Sampling time invalid
Message value: %1
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: POWER ON
Cause: The set sampling time is invalid.
- not a multiple integer of the DP clock cycle.
Fault value (r0949, floating point):
Recommended valid sampling time.
Remedy: Adapt the sampling time (e.g. set the recommended valid sampling time).
See also: p10000 (SI sampling time)

F35001 TM54F: Parameter value invalid
Message value: %1
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The entered value is invalid.
Fault value (r0949, interpret decimal):
Parameter number with the invalid value.
Remedy: Correct the parameter value.

F35002 TM54F: Commissioning not possible
Message value: %1
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The commissioning mode activation was rejected because the pulses had not been suppressed for at least one drive belonging to the TM54F.
Fault value (r0949, interpret decimal):
Drive object number of the first drive found without pulse suppression.
Remedy: Set pulse suppression for the drive specified in the fault value.

F35003 TM54F: Acknowledgement on the Control Unit is required
Message value: -
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: A fault on the Terminal Module 54F (TM54) was acknowledged using the safe acknowledgement (P10006).
An additional acknowledgement is also required at the Control Unit.
Remedy: Acknowledge the fault at the Control Unit.
### F35011 TM54F: Drive object number assignment illegal

| Message value | %1 |
| Drive object | B_INF, TM54F_MA, TM54F_SL, VECTOR_G |
| Reaction | NONE |
| Acknowledge | IMMEDIATELY (POWER ON) |
| Cause | A drive object number was assigned twice. Each drive object number can be assigned only once. |
| Remedy | Correct the assignment of the drive object numbers. See also: p10010 (SI drive object assignment) |

### A35012 TM54F: Test stop active

| Message value | - |
| Drive object | B_INF, TM54F_MA, TM54F_SL, VECTOR_G |
| Reaction | NONE |
| Acknowledge | NONE |
| Cause | The test stop for the Terminal Module 54F (TM54F) is presently being executed. Note: Fault F35013 is output if a fault occurs during the test stop. |
| Remedy | The alarm disappears automatically after successfully ending or canceling (when a fault condition occurs) the test stop. |

### F35013 TM54F: Test stop error

| Message value | %1 |
| Drive object | B_INF, TM54F_MA, TM54F_SL, VECTOR_G |
| Reaction | NONE |
| Acknowledge | IMMEDIATELY (POWER ON) |
| Cause | An error was detected when carrying out the test stop on the TM54F. Failsafe control signals (failsafe values) are transferred to the safety functions. Fault value (0949, interpret hexadecimal): 
```
aaaabbbc hex:
aaaa: DO or F-DI (dependent on test step cc), where the expected state was not assumed (bit 0 = F-DI 0 or F-DO 0, bit 1 = F-DI 1 or F-DO 1, etc.).
bb: Fault cause
bb = 01 hex: Internal fault.
bb = 02 hex: Fault when comparing the switching signals of the two channels (F-DI or DI).
bb = 03 hex: Internal fault.
bb = 04 hex: Fault when comparing the switching signals of the two channels (Diag-DO).
cc: State of the test stop in which the fault has occurred. The display format is as follows:
Slave fault state: (test actions)(test actions) | corresponding step for the master: (test actions)(test actions) | Description |
00 hex: (L1+OFF)(L2+ON) | 0A hex: ( ) | Synchronization / switching step
0A hex: (L1+OFF)(L2+ON) | 15 hex: ( ) | Wait step
15 hex: (L1+OFF)(L2+OFF) | 20 hex: ( ) | F-DI 0 ... 4 check for 0 V 2.) Switch step to new level
20 hex: (L1+OFF)(L2+OFF) | 2B hex: ( ) | Wait step
2B hex: (L1+ON)(L2+ON) | 36 hex: ( ) | 1.) F-DI 5 ... 9 check for 0 V 2.) Switch step to new level
36 hex: (DO OFF)( ) | 41 hex: (DO OFF)( ) | Wait step / switching step
41 hex: (DO OFF)( ) | 4C hex: (DO OFF)( ) | Wait step
4C hex: (DO ON)( ) | 57 hex: (DO ON)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step to new level
57 hex: (DO ON)( ) | 62 hex: (DO ON)( ) | Wait step
62 hex: (DO OFF)( ) | 6D hex: (DO ON)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
6D hex: (DO OFF)( ) | 78 hex: (DO ON)( ) | Wait step
78 hex: (DO ON)( ) | 83 hex: (DO OFF)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
83 hex: (DO ON)( ) | 8E hex: (DO OFF)( ) | Wait step
8E hex: (DO OFF)( ) | 99 hex: (DO OFF)( ) | 1.) Check diag-DO or diag-DI 2.) Switch step
99 hex: (DO OFF)( ) | A4 hex: (DO OFF)( ) | Wait step
A4 hex: (DO OFF)( ) | AF hex: (DO OFF)( ) | Check Diag-DO or Diag-DI
AF hex: (DO original state)( ) | C5 hex: (DO original state)( ) | Switching step |
``` |
The expected states to be checked depend on the parameterized test mode (p10047).

The display format is as follows:

Test step (SL MA): Expected Diag-DO mode 1 | Expected DI 20 ... 23 mode 2 | Expected DI 20 ... 23 mode 3

(4C hex 57 hex): Diag-DO = 0 V | DI = 24 V | DI = 24 V

(62 hex 6D hex): Diag-DO = 0 V | DI = 0 V | DI = 0 V

(78 hex 83 hex): Diag-DO = 0 V | DI = 0 V | DI = 24 V

(8E hex 99 hex): Diag-DO = 24 V | DI = 0 V | DI = 24 V

(A4 hex AF hex): Diag-DO = 0 V | DI = 24 V | DI = 24 V

Example:

If an error with fault causes bb = 02 hex or 04 hex occurs in a test stop step, the test action for the fault took place in the previous test stop step. The expected states are tested in the next step.

Master signals fault value 0001_04AF and slave signals fault value 0001_04A4.

aaaa = 1 --> F-DO 0 is involved.

bb = 04 hex --> the test of the Diag-DO was unsuccessful.

cc = The expected states were tested in test stop step AF on the master and A4 on the slave.

The expected state Diag-DO = 0 V was checked in the table, i.e. Diag-DO was at 0 V instead of the expected 24 V. The associated test action took place in the previous step (99 hex DO OFF, A4 hex DO OFF). Both DOs were switched to OFF.

Remedy:

Check the wiring of the F-DIs and F-DOs and restart the test stop.

Note:

The fault is withdrawn if the test stop is successfully completed.

For fault value = CCCCCCCC hex, DDDDDDDD hex, EEEEEEEE hex the following applies:

These fault values occur together with fault F35152. In this case, all parameters for the test stop should be checked.

You should also check whether the firmware version of the TM54F matches that of the Control Unit.

You also need to check p10001, p10017, p10046 and p10047.

A POWER ON must be carried out after correcting the parameters.
List of faults and alarms

yyyy yyyy bin: Motor Module replaced or a DRIVE-CLiQ cable of a Motor Module not inserted.
Bit 8 = 1: Motor Module from drive 1 was replaced or does not communicate.
- Bit 13 = 1: Motor Module from drive 6 was replaced or does not communicate.
Note:
When this fault is present, none of the drives listed in the fault value, which have drive-based motion monitoring functions operating with TM54F, are enabled.
For fault value = 0:
The number of drive objects specified in p10010 is not equal to the number of drives that have drive-based motion monitoring functions that have been enabled.
See also: p10010 (SI drive object assignment)

Remedy:
For all drive objects specified in p10010, check whether the drive-based motion monitoring functions with TM54F are enabled (p9601).
Check as to whether F35051 is also output and remove the cause.
Check whether each drive object number is listed only once in the indices of p10010.
Note:
If a drive was deactivated and activated without first having established the DRIVE-CLiQ connection, then this alarm is also output.
When replacing a Motor Module, carry out the following steps:
- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
For SINUMERIK, the following applies:
HMI supports the replacement of components with Safety functions (operating area "Diagnostics" --> Softkey "Alarm list" --> Softkey "Confirm SI HW" etc.).
The precise procedure is given in the following document:
SINUMERIK Function Manual Safety Integrated

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A35016  TM54F: Net data communication with drive not established
Message value: -
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause:
The cyclic net data communication within the Terminal Module 54F (TM54F) is still not active.
This message is output after the TM54F master and TM54F slave have booted and is automatically withdrawn as soon as communications have been established.
If a drive does not communicate with the TM54F, then none of the drives parameterized in p10010 are enabled.
Remedy:
When replacing a Motor Module, carry out the following steps:
- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
The following always applies:
- for all drive objects specified in p10010, check whether the drive-based motion monitoring functions with TM54F are enabled (p9601).
- check whether fault F35150 is present and if required, remove the cause of the fault.
See also: r10055 (SI TM54F communication status drive-specific)

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F35040  TM54F: 24 V undervoltage
Message value: Fault cause: %1 bin
Drive object: B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause:
For the 24 V power supply for the Terminal Module 54F (TM54F) an undervoltage condition was detected.
As fault response fail-safe input terminal signals are transferred to the motion monitoring functions.
Fault value (r0949, interpret binary):
Bit 0 = 1: Power supply undervoltage at connection X524.
Bit 1 = 1: Power supply undervoltage at connection X514.
Remedy:
- check the 24 V DC power supply for the TM54F.
- carry out safe acknowledgement (p10006).
F35043  TM54F: 24 V overvoltage

Message value:  -
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  For the 24 V power supply for the Terminal Module 54F (TM54F) an overvoltage condition was detected.
As fault response fail-safe input terminal signals are transferred to the motion monitoring functions.
Remedy:  - check the 24 V DC power supply for the TM54F.
- carry out safe acknowledgement (p10006).

F35051  TM54F: Defect in a monitoring channel

Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The Terminal Module 54F (TM54F) has identified an error in the crosswise data comparison between the two control channels.
As fault response fail-safe input terminal signals are transferred to the motion monitoring functions.
Fault value (r0949, interpret hexadecimal):
aaaaabbc hex
aaaa: A value greater than zero indicates an internal software error.
bb: Data to be cross-compared that resulted in the error.
b = 00 hex: p10000
b = 01 hex: p10001
b = 02 hex: p10002
b = 03 hex: p10006
b = 04 hex: p10008
b = 05 hex: p10010
b = 06 hex: p10011
b = 07 hex: p10020
b = 08 hex: p10021
b = 09 hex: p10022
b = 0A hex: p10023
b = 0B hex: p10024
b = 0C hex: p10025
b = 0D hex: p10026
b = 0E hex: p10027
b = 0F hex: p10028
b = 10 hex: p10036
b = 11 hex: p10037
b = 12 hex: p10038
b = 13 hex: p10039
b = 14 hex: p10040
b = 15 hex: p10041
b = 16 hex: p10042
b = 17 hex: p10043
b = 18 hex: p10044
b = 19 hex: p10045
b = 1A hex: p10046
b = 1B hex: Test stop internal p10041
b = 1C hex: Test stop internal p10046
b = 1D ... 1F hex: internal test stop p101, p10002, p10000
b = 20 ... 2A hex: internal test stop p1040, p1046, p1047
b = 2B hex: Test stop initialization
b = 2C hex: Input/output calculation initialization
b = 2D ... 4F hex: internal data for the output calculation p1042 ... p1045
b = 46 ... 63 hex: data for the calculation of drive group 1
b = 64 ... 81 hex: data for the calculation of drive group 2
b = 82 ... 9F hex: data for the calculation of drive group 3
b = A0 ... BD hex: data for the calculation of the drive group 4
b = BE hex: debounce time of the fail-safe inputs (F-DI) p10017
Faults and alarms

List of faults and alarms

bb = BF hex: debounce time of the single-channel inputs (DI) p10017
bb = C0 hex: debounce time of the Diag inputs p10017
bb = C1 hex: Internal data to p10030 SDI positive
bb = C2 hex: Internal data to p10031 SDI negative
bb = C3 ... CA hex: new data to calculate the drive groups p10030 ... p10031
bb = CB hex: p10032
bb = CC hex: p10033
bb = CD hex: p10009
bb = CE ... CF drive group 1 SLP parameter p10032 ... p10033
bb = D0 ... D1 drive group 2 SLP parameter p10032 ... p10033
bb = D2 ... D3 drive group 3 SLP parameter p10032 ... p10033
bb = D4 ... D5 drive group 4 SLP parameter p10032 ... p10033
bb = D6 initialize retraction
bb = D7 retraction, SLP
cc: Index of the data to be cross-compared that resulted in the error.

Remedy:
Carry out the following steps on the TM54F:
- activate the safety commissioning mode (p0010 = 95).
- start the copy function for SI parameters (p9700 = 57 hex).
- acknowledge complete data change (p9701 = AC hex).
- exit the safety commissioning mode (p0010 = 0).
- save all parameters (p0977 = 1).
- carry out safe acknowledgement (p10006).
For an internal software error (aaaa > 0):
- For TM54F, upgrade the firmware to a later version.
- contact the Hotline.
- replace the TM54F.

F35052 (A)  TM54F: Internal hardware error
Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: An internal software/hardware error has been detected on the Terminal Module 54F (TM54F).
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- check the electrical cabinet design and cable routing for EMC compliance
- upgrade TM54F firmware to more recent version.
- contact the Hotline.
- replace the TM54F.

Reaction upon A: NONE
Acknow. upon A: NONE

F35053  TM54F: Temperature fault threshold exceeded
Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The temperature measured using the temperature sensing on the TM54F has exceeded the threshold value to initiate this fault.
As fault response fail-safe input terminal signals are transferred to the motion monitoring functions.
Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- allow the TM54F to cool down.
- carry out safe acknowledgement (p10006).
A35054  TM54F: Temperature alarm threshold exceeded
Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The temperature measured using the temperature sensing on the TM54F has exceeded the threshold value to initiate this alarm.
Remedy:  - allow the TM54F to cool down.
         - carry out safe acknowledgement (p10006).

A35075 (F)  TM54F: Error during internal communication
Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  An internal communications error has occurred in the Terminal Module 54F (TM54F). This alarm is also output:
- If TM54F exists and no safety function of the TM54F has yet been parameterized.
- If p10000 of the TM54F master is not set the same as p10000 of the TM54F slave.
Alarm value (r2124, interpret decimal):
Only for internal Siemens diagnostics.
Remedy:  If TM54F exists and no safety function has yet been parameterized:
- Not necessary. The alarm disappears automatically after a safety function of the TM54F has been parameterized. For p10010 from the TM54F master not equal to the TM54F slave:
- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.
For internal communication errors:
- check the electrical cabinet design and cable routing for EMC compliance
- upgrade the software on the TM54F.
- contact the Hotline.
- replace the TM54F.

A35080 (F)  TM54F: Checksum error safety parameters
Message value:  %1
Drive object:  B_INF, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  The calculated checksum entered in r10004 over the safety-relevant parameters does not match the reference checksum saved in p10005 at the last machine acceptance.
Fault value (r9949, interpret binary):
Bit 0 = 1: Checksum error for functional SI parameters.
Bit 1 = 1: Checksum error for SI parameters for component assignment.
Remedy:  - check the safety-relevant parameters and if required, correct.
         - set the reference checksum to the actual checksum.
         - acknowledge the hardware replacement.
         - carry out a POWER ON (power off/on).
         - carry out an acceptance test.

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### A35081 (F)

**TM54F: Static (steady state) 1 signal at the F-DI for safety-relevant acknowledgement**

**Message value:**

- 

**Drive object:**

B_INF, TM54F_MA, TM54F_SL, VECTOR_G

**Reaction:**

NONE

**Acknowledge:**

NONE

**Cause:**

A logical 1 signal is present at the F-DI configured in p10006 for more than 10 seconds. If, at the F-DI no acknowledgment was performed for safe acknowledgment, then a steady-state logical and 0 signal must be present. This avoids unintentional safety-relevant acknowledgement (or the "Internal Event Acknowledge" signal) if a wire breaks or one of the two digital inputs bounces.

**Remedy:**

Set the fail-safe digital input (F-DI) to a logical 0 signal (p10006). Note:

F-DI: Failsafe Digital Input

**Reaction upon F:**

NONE

**Acknowl. upon F:**

IMMEDIATELY

### F35150

**TM54F: Communication error**

**Message value:**

%1

**Drive object:**

B_INF, TM54F_MA, TM54F_SL, VECTOR_G

**Reaction:**

NONE

**Acknowledge:**

IMMEDIATELY (POWER ON)

**Cause:**

A communication error between the TM54F master and Control Unit or between the TM54F slave and the Motor Module was detected.

Fault value (r0949, interpret hexadecimal):

Only for internal Siemens troubleshooting.

**Remedy:**

When replacing a Motor Module, carry out the following steps:

- start the copy function for the node identifier on the TM54F (p9700 = 1D hex).
- acknowledge the hardware CRC on the TM54F (p9701 = EC hex).
- save all parameters (p0977 = 1).
- carry out a POWER ON (power off/on) for all components.

The following always applies:

- check the electrical cabinet design and cable routing for EMC compliance
- upgrade the software on the TM54F.
- contact the Hotline.
- replace the TM54F.

### F35151

**TM54F: Discrepancy error**

**Message value:**

%1

**Drive object:**

B_INF, TM54F_MA, TM54F_SL, VECTOR_G

**Reaction:**

NONE

**Acknowledge:**

IMMEDIATELY

**Cause:**

The safety input terminals or output terminals show a different state longer than that parameterized in p10002. Fault value (r0949, interpret hexadecimal):

```
yyyyxxxx hex
```

*xxxx:* The safety-relevant input terminals F-DI indicate a discrepancy.

Bit 0: Discrepancy for F-DI 0

```
Bit 9: Discrepancy for F-DI 9
```

*yyyy:* The safety-relevant output terminals F-DO indicate a discrepancy.

Bit 0: Discrepancy for F-DO 0

```
... Bit 3: Discrepancy for F-DO 3
```

**Note:**

If several discrepancy errors occur consecutively, then this fault is only signaled for the first error that occurs. The following options are available to analyze all of the discrepancy errors:

- Using the commissioning software, evaluate the input states and output states of the TM54F. All discrepancy errors are displayed here.
- Compare parameters p10051 and p10052 from the TM54F master and TM54F slave for discrepancy.
**Remedy:**

Check the wiring of the corresponding F-DI (contact problems).

Discrepancy errors in the fail-safe digital inputs (F-DI) can only be completely acknowledged if, after the cause of the error was resolved, safe acknowledgement was carried out (see p10006). As long as safety acknowledgement was not carried out, the corresponding F-DI stays in the safe state internally.

For cyclic switching operations at the fail-safe digital inputs (F-DI), it may be necessary to adapt the discrepancy time to the switching frequency:

- If the period of a cyclic switching pulse has the order of magnitude of double the value of p10002, then the following formulas must be checked.
  - p10002 < (tp / 2) - td (discrepancy time must be less than half the period minus the actual discrepancy time)
  - p10002 >= p10000 (discrepancy time must be no less than p10000)
  - p10002 > td (discrepancy time must be greater than the switch discrepancy time which may actually apply)

  td: possible actual discrepancy time (in ms) that can occur with a switching operation. This must correspond to at least 1 SI sampling cycle (see p10000).
  tp: period for a switching operation in ms.

- For cyclic switching operations and when debounce (p10017) is active, the discrepancy time is directly specified by the debounce time.

  If the period of a cyclic switching pulse has the order of magnitude of twice the debounce time, then the following formulas should be checked.
  - p10002 < p10017 + 1ms - td
  - p10002 > td
  - p10002 >= p10000

**Example:**

If the SI sampling cycle is 12 ms and the switching frequency is 110 ms (p10017 = 0), the maximum discrepancy time which can be set is as follows:

p10002 <= 110/2 ms - 12 ms = 48 ms --> rounded-off, the following is obtained p10002 <= 36 ms

Since the discrepancy time can only be accepted as a whole SI sampling time, the value will need to be rounded up or down to a whole SI sampling time value if it is not an exact integer multiple of an SI sampling time.

F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

---

**F35152**

**TM54F: Internal software error**

**Message value:** %1

**Drive object:** B_INF, TM54F_MA, TM54F_SL, VECTOR_G

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** An internal software error has occurred in the Terminal Module 54F (TM54F).

The fail-safe digital inputs and digital outputs (F-DI, F-DO) on the TM54F have been set to the safe state.

Fault value (r0949, interpret decimal):

Only for internal Siemens troubleshooting.

Note:

F-DI: Failsafe Digital Input
F-DO: Failsafe Digital Output

**Remedy:**

Check that the firmware version of the TM54F matches the Control Unit's firmware version.

The automatic firmware update must be activated in the project.

Note:

This signal will also appear, for example, in conjunction with fault F35013. In this case you should check all the parameters for the test stop on the TM54F (p10001, p10003, p10007, p10041, p10046, p10047). In this case, a POWER ON is required after the parameters have been corrected.

---

**A35200 (F, N)**

**TM: Calibration data**

**Message value:** %1

**Drive object:** B_INF, TM150, TM31, VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** An error was detected in the calibration data of the Terminal Module.

Alarm value (r2124, interpret decimal):

*ddcbaa dec: dd = component number, c = AI/AO, b = fault type, aa = number*

- c = 0: analog input (AI, Analog Input)
- c = 1: analog output (AO, Analog Output)
- b = 0: No calibration data available.
- b = 1: Offset too high (> 100 mV).
Faults and alarms

List of faults and alarms

Remedy:
- carry out a POWER ON (power off/on) for all components.
- Replace the component if necessary.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35207 (N, A) TM: Temperature fault/alarm threshold channel 0 exceeded
Message value: %1
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[0], p4103[0]).
  or
- fault threshold exceeded (p4102[1]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0] = 1, 4), the following applies:
  - if r4101[0] > 1650 ohms, the temperature r4105[0] = 250 °C
  - if r4101[0] <= 1650 ohms, the temperature r4105[0] = -50 °C
The temperature actual value is displayed via connector output r4105[0] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy:
- allow the temperature sensor to cool down to below p4102[1] - hysteresis (5 K, for TM150, can be set using p4118[0]).
  or
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35208 (N, A) TM: Temperature fault/alarm threshold channel 1 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause:
For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[2], p4103[1]).
  or
- fault threshold exceeded (p4102[3]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[1] = 1, 4), the following applies:
  - if r4101[1] > 1650 ohms, the temperature r4105[1] = 250 °C
  - if r4101[1] <= 1650 ohms, the temperature r4105[1] = -50 °C
The temperature actual value is displayed via connector output r4105[1] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy:  
- allow the temperature sensor to cool down to below p4102[3] - hysteresis (5 K, for TM150, can be set using p4118[1]).  
- if required, set the fault response to NONE (p2100, p2101).  
See also: p4102

Reaction upon N: NONE  
Acknowl. upon N: NONE  
Reaction upon A: NONE  
Acknowl. upon A: NONE

F35209 (N, A)  
TM: Temperature fault/alarm threshold channel 2 exceeded

Message value: %1  
Drive object: B_INF, TM150, VECTOR_G  
Reaction:  
Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (NONE, OFF1, OFF3)  
Acknowledge: IMMEDIATELY (POWER ON)  
Cause:  
For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:  
- alarm threshold has been exceeded longer than that set in the timer (p4102[4], p4103[2]).  
or  
- fault threshold exceeded (p4102[5]).  
Note:  
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[2] = 1, 4), the following applies:  
The temperature actual value is displayed via connector output r4105[2] and can be interconnected.  
Notice:  
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.  
Fault value (r0949, interpret decimal):  
Temperature actual value at the time of initiation [0.1 °C].

Remedy:  
- allow the temperature sensor to cool down to below p4102[5] - hysteresis (5 K, for TM150, can be set using p4118[2]).  
- if required, set the fault response to NONE (p2100, p2101).  
See also: p4102

Reaction upon N: NONE  
Acknowl. upon N: NONE  
Reaction upon A: NONE  
Acknowl. upon A: NONE

F35210 (N, A)  
TM: Temperature fault/alarm threshold channel 3 exceeded

Message value: %1  
Drive object: B_INF, TM150, VECTOR_G  
Reaction:  
Infeed: OFF2 (NONE, OFF1)  
Vector: OFF2 (NONE, OFF1, OFF3)  
Acknowledge: IMMEDIATELY (POWER ON)  
Cause:  
For the temperature evaluation via the Terminal Module (TM), at least one of the following conditions to initiate this fault is fulfilled:  
- alarm threshold has been exceeded longer than that set in the timer (p4102[6], p4103[3]).  
or  
- fault threshold exceeded (p4102[7]).  
Note:  
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[3] = 1, 4), the following applies:  
The temperature actual value is displayed via connector output r4105[3] and can be interconnected.  
Notice:  
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
**Fault value (r0949, interpret decimal):**
Temperature actual value at the time of initiation [0.1 °C].

**Remedy:**
- allow the temperature sensor to cool down to below p4102[7] - hysteresis (5 K, for TM150, can be set using p4118[3]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

**A35211 (F, N) TM: Temperature alarm threshold channel 0 exceeded**

**Message value:** %1

**Drive object:** B_INF, TM150, TM31, VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[0]) has exceeded the threshold value to initiate this alarm (p4102[0]).

Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[0] = 1, 4), the following applies:
- if r4101[0] > 1650 ohms, the temperature r4105[0] = 250 °C
- if r4101[0] <= 1650 ohms, the temperature r4105[0] = -50 °C

**Alarm value (r2124, interpret decimal):**
Temperature actual value at the time of initiation [0.1 °C].

**Remedy:**
- allow the temperature sensor to cool down to below p4102[0] - hysteresis (5 K); for TM150, can be set using p4118[0].
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

**A35212 (F, N) TM: Temperature alarm threshold channel 1 exceeded**

**Message value:** %1

**Drive object:** B_INF, TM150, VECTOR_G

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[1]) has exceeded the threshold value to initiate this alarm (p4102[2]).

Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[1] = 1, 4), the following applies:
- if r4101[1] > 1650 ohms, the temperature r4105[1] = 250 °C
- if r4101[1] <= 1650 ohms, the temperature r4105[1] = -50 °C

**Alarm value (r2124, interpret decimal):**
Temperature actual value at the time of initiation [0.1 °C].

**Remedy:**
- allow the temperature sensor to cool down to below p4102[4] - hysteresis (5 K); for TM150, can be set using p4118[1].
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE
### List of faults and alarms

#### A35213 (F, N) TM: Temperature alarm threshold channel 2 exceeded

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, TM150, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[2]) has exceeded the threshold value to initiate this alarm (p4102[4]). Note: For sensor type &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[2] = 1, 4), the following applies: - if r4101[2] &gt; 1650 ohms, the temperature r4105[2] = 250 °C - if r4101[2] &lt;= 1650 ohms, the temperature r4105[2] = -50 °C Alarm value (r2124, interpret decimal): Temperature actual value at the time of initiation [0.1 °C].</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- allow the temperature sensor to cool down to below p4102[4] - hysteresis (5 K); for TM150, can be set using p4118[2]. See also: p4102</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

#### A35214 (F, N) TM: Temperature alarm threshold channel 3 exceeded

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, TM150, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[3]) has exceeded the threshold value to initiate this alarm (p4102[6]). Note: For sensor type &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[3] = 1, 4), the following applies: - if r4101[3] &gt; 1650 ohms, the temperature r4105[3] = 250 °C - if r4101[3] &lt;= 1650 ohms, the temperature r4105[3] = -50 °C Alarm value (r2124, interpret decimal): Temperature actual value at the time of initiation [0.1 °C].</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- allow the temperature sensor to cool down to below p4102[6] - hysteresis (5 K); for TM150, can be set using p4118[3]. See also: p4102</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

#### F35220 (N, A) TM: Frequency limit reached for signal output

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, TM31, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>Infeed: OFF1 (NONE, OFF2) Vector: OFF1 (NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>The signals output from the Terminal Module 41 (TM41) for tracks A/B have reached the limit frequency. The output signals are no longer in synchronism with the specified setpoint. Note: If with SIMOTION the TM41 has been configured as the technology project, this fault is also output in response to short-circuited A/B signals in X520.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>SIMOTION (p4400 = 0) operating mode: - enter a lower speed setpoint (p1155). - reduce the encoder pulse number (p0408). - check track A/B for short-circuits.</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
SINAMICS (p4400 = 1) operating mode:
- the fine resolution of TM41 in p0418 does not match that of the connector input that was interconnected at P4420
- the encoder position actual value r0479 interconnected at connector input p4420 has an excessively high actual speed

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35221 (N, A) TM: Setpoint - actual value deviation, outside the tolerance range

Message value: -
Drive object: B_INF, TM31, VECTOR_G
Reaction: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The deviation between the setpoint and the output signals (track A/B) exceeds the tolerance of +/-3 %. The deviation between the internal and external measured value is too high.
Remedy: - reduce the basic clock cycle (p0110, p0111).
- replace the module.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35222 (F, N) TM: Encoder pulse number not permissible

Message value: %1
Drive object: B_INF, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The encoder pulse number entered does not match the permissible pulse number from a hardware perspective. Fault value (r0949, interpret decimal):
1: Encoder pulse number is too high.
2: Encoder pulse number is too low.
4: Encoder pulse number is less than the zero mark offset (p4426).
Remedy: - enter the encoder pulse number in the permissible range (p0408).
- if necessary, replace TM41 SAC with TM41 DAC.
Note:
TM41 SAC: order no. = 6SL3055-0AA00-3PA0
TM41 DAC: order no. = 6SL3055-0AA00-3PA1
The following applies for TM41 SAC:
- minimum/maximum value for p0408: 1000/8192
The following applies for TM41 DAC:
- minimum/maximum value for p0408: 1000/16384
See also: p0408 (Rotary encoder pulse No.)

Reaction upon F: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35223 (F, N) TM: Zero mark offset not permissible

Message value: %1
Drive object: B_INF, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The entered zero mark offset is not permissible.
Fault value (r0949, interpret decimal):
1: Zero mark offset is too high.

**Remedy:** Enter the zero mark offset in the permissible range (p4426).

**Reaction upon F:** Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY (POWER ON)

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

---

**F35230**

**TM: Hardware fault**

**Message value:** %1

**Drive object:** B_INF, TM150, TM31, VECTOR_G

**Reaction:** Infeed: OFF1 (NONE, OFF2)
Vector: NONE

**Acknowledge:** POWER ON

**Cause:** The Terminal Module (TM) used has signaled internal errors.
Signals from this module may not be evaluated because they are very likely to be incorrect.

**Remedy:** If required, replace the Terminal Module.

---

**F35233**

**DRIVE-CLiQ component does not support function**

**Message value:** %1

**Drive object:** B_INF, TM150, TM31, VECTOR_G

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A function requested by the Control Unit is not supported by a DRIVE-CLiQ component.

Fault value (r0949, interpret decimal):
1: Terminal Module 31 does not support the function "Timer for temperature evaluation" (X522.7/8, p4103 > 0.000).
4: The improved actual value resolution is not supported (p4401.4).
5: The improved setpoint resolution is not supported (p4401.5).
6: The residual value handling in the setpoint channel cannot be deactivated (p4401.6).
7: Output frequencies greater than 750 kHz cannot be activated (p4401.7).

**Remedy:**
- De-activate timer for temperature evaluation (X522.7/8) (p4103 = 0.000).
- Use Terminal Module 31 and the relevant firmware version to enable the "Timer for temperature evaluation" function (Order No. 6SL3055-0AA00-3AA1, firmware version 2.6 and higher).
See also: p4103

---

**F35400 (N, A)**

**TM: Temperature fault/alarm threshold channel 4 exceeded**

**Message value:** %1

**Drive object:** B_INF, TM150, VECTOR_G

**Reaction:** Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[8], p4103[4]).
- fault threshold exceeded (p4102[9]).

**Note:**
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[4] = 1, 4), the following applies:

The temperature actual value is displayed via connector output r4105[4] and can be interconnected.

**Notice:**
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

**Fault value (r0949, interpret decimal):**
Temperature actual value at the time of initiation [0.1 °C].
Faults and alarms

List of faults and alarms

Remedy:
- allow the temperature sensor to cool down to below p4102[9] - hysteresis (p4118[4]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35401 (N, A) TM: Temperature fault/alarm threshold channel 5 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[10], p4103[5]).
or
- fault threshold exceeded (p4102[11]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[5] = 1, 4), the following applies:
The temperature actual value is displayed via connector output r4105[5] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy:
- allow the temperature sensor to cool down to below p4102[11] - hysteresis (p4118[5]).
or
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35402 (N, A) TM: Temperature fault/alarm threshold channel 6 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction:
Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[12], p4103[6]).
or
- fault threshold exceeded (p4102[13]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[6] = 1, 4), the following applies:
The temperature actual value is displayed via connector output r4105[6] and can be interconnected.
Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.
Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
## Faults and alarms

### List of faults and alarms

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<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, TM150, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: OFF2 (NONE, OFF1) Vector: OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:</td>
</tr>
<tr>
<td></td>
<td>- alarm threshold has been exceeded longer than that set in the timer (p4102[14], p4103[7]).</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>- fault threshold exceeded (p4102[15]).</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>For sensor type &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[7] = 1, 4), the following applies:</td>
</tr>
<tr>
<td></td>
<td>- if r4101[7] &gt; 1650 ohms, the temperature r4105[7] = 250 °C</td>
</tr>
<tr>
<td></td>
<td>The temperature actual value is displayed via connector output r4105[7] and can be interconnected.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- allow the temperature sensor to cool down to below p4102[13] - hysteresis (p4118[6]).</td>
</tr>
<tr>
<td></td>
<td>- if required, set the fault response to NONE (p2100, p2101).</td>
</tr>
<tr>
<td><strong>See also:</strong></td>
<td>p4102</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Reaction upon A:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon A:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F35404 (N, A)</th>
<th>TM: Temperature fault/alarm threshold channel 8 exceeded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>B_INF, TM150, VECTOR_G</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>Infeed: OFF2 (NONE, OFF1) Vector: OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:</td>
</tr>
<tr>
<td></td>
<td>- alarm threshold has been exceeded longer than that set in the timer (p4102[16], p4103[8]).</td>
</tr>
<tr>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td>- fault threshold exceeded (p4102[17]).</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>For sensor type &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[8] = 1, 4), the following applies:</td>
</tr>
<tr>
<td></td>
<td>- if r4101[8] &gt; 1650 ohms, the temperature r4105[8] = 250 °C</td>
</tr>
<tr>
<td></td>
<td>- if r4101[8] &lt;= 1650 ohms, the temperature r4105[8] = -50 °C</td>
</tr>
<tr>
<td></td>
<td>The temperature actual value is displayed via connector output r4105[8] and can be interconnected.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- allow the temperature sensor to cool down to below p4102[13] - hysteresis (p4118[6]).</td>
</tr>
<tr>
<td></td>
<td>- if required, set the fault response to NONE (p2100, p2101).</td>
</tr>
<tr>
<td><strong>See also:</strong></td>
<td>p4102</td>
</tr>
<tr>
<td><strong>Reaction upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon N:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Reaction upon A:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowl. upon A:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

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SINAMICS G130/G150 List Manual (LH2), 01/2012, A5E03263479A
Faults and alarms

List of faults and alarms

Remedy:
- allow the temperature sensor to cool down to below p4102[17] - hysteresis (p4118[8]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35405 (N, A) TM: Temperature fault/alarm threshold channel 9 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[18], p4103[9]).
or
- fault threshold exceeded (p4102[19]).

Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[9] = 1, 4), the following applies:
- if r4101[9] > 1650 ohms, the temperature r4105[9] = 250 °C
- if r4101[9] <= 1650 ohms, the temperature r4105[9] = -50 °C
The temperature actual value is displayed via connector output r4105[9] and can be interconnected.

Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy:
- allow the temperature sensor to cool down to below p4102[19] - hysteresis (p4118[9]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F35406 (N, A) TM: Temperature fault/alarm threshold channel 10 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: For the temperature evaluation via the Terminal Module 150 (TM150), at least one of the following conditions to initiate this fault is fulfilled:
- alarm threshold has been exceeded longer than that set in the timer (p4102[20], p4103[10]).
or
- fault threshold exceeded (p4102[21]).

Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[10] = 1, 4), the following applies:
- if r4101[10] > 1650 ohms, the temperature r4105[10] = 250 °C
- if r4101[10] <= 1650 ohms, the temperature r4105[10] = -50 °C
The temperature actual value is displayed via connector output r4105[10] and can be interconnected.

Notice:
This fault only causes the drive to shut down if there is at least one BICO interconnection between the drive and the Terminal Module.

Fault value (r0949, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy:
- allow the temperature sensor to cool down to below p4102[21] - hysteresis (p4118[10]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35410 (F, N) TM: Temperature alarm threshold channel 4 exceeded
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[4]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[8]).
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[4] = 1, 4), the following applies:
Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy:
Allow the temperature sensor to cool down to below p4102[8] - hysteresis (p4118[4]).
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE
**A35411 (F, N) TM: Temperature alarm threshold channel 5 exceeded**

- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The temperature (r4105[5]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[10]).
  
  **Note:**
  
  For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[5] = 1, 4), the following applies:
  
  
  **Alarm value (r2124, interpret decimal):**
  
  Temperature actual value at the time of initiation [0.1 °C].

- **Remedy:** Allow the temperature sensor to cool down to below p4102[10] - hysteresis (p4118[5]).
  
  See also: p4102

- **Reaction upon F:** NONE
- **Acknow. upon F:** IMMEDIATELY (POWER ON)
- **Reaction upon N:** NONE
- **Acknow. upon N:** NONE

**A35412 (F, N) TM: Temperature alarm threshold channel 6 exceeded**

- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The temperature (r4105[6]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[12]).
  
  **Note:**
  
  For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[6] = 1, 4), the following applies:
  
  
  **Alarm value (r2124, interpret decimal):**
  
  Temperature actual value at the time of initiation [0.1 °C].

- **Remedy:** Allow the temperature sensor to cool down to below p4102[12] - hysteresis (p4118[6]).
  
  See also: p4102

- **Reaction upon F:** NONE
- **Acknow. upon F:** IMMEDIATELY (POWER ON)
- **Reaction upon N:** NONE
- **Acknow. upon N:** NONE

**A35413 (F, N) TM: Temperature alarm threshold channel 7 exceeded**

- **Message value:** %1
- **Drive object:** B_INF, TM150, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The temperature (r4105[7]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[14]).
  
  **Note:**
  
  For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[7] = 1, 4), the following applies:
  
  - if r4101[7] > 1650 ohms, the temperature r4105[7] = 250 °C
  
  **Alarm value (r2124, interpret decimal):**
  
  Temperature actual value at the time of initiation [0.1 °C].

- **Remedy:** Allow the temperature sensor to cool down to below p4102[14] - hysteresis (p4118[7]).
  
  See also: p4102

- **Reaction upon F:** NONE
- **Acknow. upon F:** IMMEDIATELY (POWER ON)
A35414 (F, N) TM: Temperature alarm threshold channel 8 exceeded

Message value: %1

Drive object: B_INF, TM150, VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[8]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[16]).

Note: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[8] = 1, 4), the following applies:
- if r4101[8] > 1650 ohms, the temperature r4105[8] = 250 °C
- if r4101[8] <= 1650 ohms, the temperature r4105[8] = -50 °C

Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[16] - hysteresis (p4118[8]).
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35415 (F, N) TM: Temperature alarm threshold channel 9 exceeded

Message value: %1

Drive object: B_INF, TM150, VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[9]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[18]).

Note: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[9] = 1, 4), the following applies:
- if r4101[9] > 1650 ohms, the temperature r4105[9] = 250 °C
- if r4101[9] <= 1650 ohms, the temperature r4105[9] = -50 °C

Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[18] - hysteresis (p4118[9]).
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35416 (F, N) TM: Temperature alarm threshold channel 10 exceeded

Message value: %1

Drive object: B_INF, TM150, VECTOR_G

Reaction: NONE

Acknowledge: NONE

Cause: The temperature (r4105[10]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[20]).

Note: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[10] = 1, 4), the following applies:
- if r4101[10] > 1650 ohms, the temperature r4105[10] = 250 °C
- if r4101[10] <= 1650 ohms, the temperature r4105[10] = -50 °C

Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy: Allow the temperature sensor to cool down to below p4102[20] - hysteresis (p4118[10]).
See also: p4102
Faults and alarms

List of faults and alarms

A35417 (F, N) TM: Temperature alarm threshold channel 11 exceeded

Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The temperature (r4105[11]) measured using the temperature sensing of the Terminal Module 150 (TM150) has exceeded the threshold value to initiate this alarm (p4102[22]).
Note: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[11] = 1, 4), the following applies:
Alarm value (r2124, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].
Remedy: Allow the temperature sensor to cool down to below p4102[22] - hysteresis (p4118[11]).
See also: p41102

N35800 (F) TM: Group signal

Message value: 
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: NONE
Cause: The Terminal Module has detected at least one fault.
Remedy: Evaluates other actual messages.

A35801 (F, N) TM DRIVE-CLiQ: Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module to the encoder involved.
Fault cause: 10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy: - check the DRIVE-CLiQ connection.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
A35802 (F, N) TM: Time slice overflow
Message value: -
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: A time slice overflow has occurred on the Terminal Module.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35803 (F, N) TM: Memory test
Message value: -
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred during the memory test on the Terminal Module.
Remedy: - check whether the permissible ambient temperature for the Terminal Module is being maintained.
- replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35804 (N, A) TM: CRC
Message value: %1
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A checksum error has occurred when reading-out the program memory on the Terminal Module.
Fault value (r0949, interpret hexadecimal):
Difference between the checksum at POWER ON and the actual checksum.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Terminal Module.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A35805 (F, N) TM: EPROM checksum error
Message value: %1
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Internal parameter data is corrupted.
Alarm value (r2124, interpret hexadecimal):
01: EEPROM access error.
02: Too many blocks in the EEPROM.
Remedy: - check whether the permissible ambient temperature for the component is maintained.
- replace the Terminal Module 31 (TM31).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Faults and alarms

List of faults and alarms

Reaction upon N: NONE
Acknowl. upon N: NONE

A35807 (F, N)  TM: Sequence control time monitoring
Message value: -
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: Error, timeout, sequence control on the Terminal Module.
Remedy: Replace the Terminal Module.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35820  TM DRIVE-CLiQ: Telegram error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the Terminal Module involved.
Fault cause:
1 (= 01 hex): Checksum error (CRC error).
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex): The length of the receive telegram does not match the receive list.
5 (= 05 hex): The type of the receive telegram does not match the receive list.
6 (= 06 hex): The address of the component in the telegram and in the receive list do not match.
7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram.
8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one.
9 (= 09 hex): The error bit in the receive telegram is set.
16 (= 10 hex): The receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F35835  TM DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the Terminal Module involved. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F35836  TM DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  OFF1 (OFF2)
Acknowledge:  IMMEDIATELY
Cause:  A DRIVE-CLiQ communication error has occurred from the Terminal Module to the encoder involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON.

F35837  PTM DRIVE-CLiQ: Component fault
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  OFF1 (OFF2)
Acknowledge:  IMMEDIATELY
Cause:  Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F35845  TM DRIVE-CLiQ: Cyclic data transfer error
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction:  OFF1 (OFF2)
Acknowledge:  IMMEDIATELY
Cause:  A DRIVE-CLiQ communication error has occurred from the Terminal Module (TM) to the encoder involved.
Faults and alarms

List of faults and alarms

Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F35850  TM: Internal software error
Message value: %1
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: Infeed: OFF1 (NONE, OFF2)
Vector: OFF1 (NONE, OFF2, OFF3)
Acknowledge: POWER ON
Cause:
An internal software error in the Terminal Module (TM) has occurred.
Fault value (r0949, interpret decimal):
1: Background time slice is blocked.
2: Checksum over the code memory is not OK.

Remedy:
- replace the Terminal Module (TM).
- if required, upgrade the firmware in the Terminal Module.
- contact the Hotline.

F35851  TM DRIVE-CLiQ (CU): Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Upgrade the firmware of the component involved.

F35860  TM DRIVE-CLiQ (CU): Telegram error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.
Fault cause:
1 (= 01 hex):
Checksum error (CRC error).
2 (= 02 hex):
Telegram is shorter than specified in the length byte or in the receive list.
3 (= 03 hex):
Telegram is longer than specified in the length byte or in the receive list.
4 (= 04 hex):
The length of the receive telegram does not match the receive list.
5 (= 05 hex):
The type of the receive telegram does not match the receive list.
6 (= 06 hex):
The address of the power unit in the telegram and in the receive list do not match.
9 (= 09 hex):
The error bit in the receive telegram is set.
List of faults and alarms

16 (= 10 hex):
The receive telegram is too early.

17 (= 11 hex):
CRC error and the receive telegram is too early.

18 (= 12 hex):
The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.

19 (= 13 hex):
The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.

20 (= 14 hex):
The length of the receive telegram does not match the receive list and the receive telegram is too early.

21 (= 15 hex):
The type of the receive telegram does not match the receive list and the receive telegram is too early.

22 (= 16 hex):
The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.

25 (= 19 hex):
The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F35875 TM DRIVE-CLiQ (CU): Supply voltage failed

Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause:
The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

F35885 TM DRIVE-CLiQ (CU): Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause:
A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit.
The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Faults and alarms

List of faults and alarms

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the power supply voltage of the component involved.
- carry out a POWER ON.
- replace the component involved.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F35886 TM DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit. Data were not able to be sent.
Fault cause:
32 (= 20 hex): Error in the telegram header.
96 (= 60 hex): Response received too late during runtime measurement.
97 (= 61 hex): Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F35887 TM DRIVE-CLiQ (CU): Component fault
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component (Terminal Module) involved. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex): Error in the telegram header.
96 (= 60 hex): Response received too late during runtime measurement.
97 (= 61 hex): Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F35895 TM DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred from the Terminal Module involved (TM) to the Control Unit. Fault cause:
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F35896 TM DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: Infeed: OFF2 (NONE, OFF1)
Vector: OFF2 (IASC/DCBRAKE, NONE, OFF1, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY
Cause: The properties of the DRIVE-CLiQ component (Terminal Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F35899 (N, A) TM: Unknown fault

Message value: New message: %1
Drive object: B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G
Reaction: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: A fault has occurred on the Terminal Module that cannot be interpreted by the Control Unit firmware.
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Fault value (r0949, interpret decimal):
Fault number.
Note:
If required, the significance of this new fault can be read about in a more recent description of the Control Unit.
Remedy:
- replace the firmware on the Terminal Module by an older firmware version (r0158).
- upgrade the firmware on the Control Unit (r0018).

A35903 (F, N) TM: I2C bus error occurred

Message value: -
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred while accessing the internal I2C bus of the Terminal Module.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE
Faults and alarms

List of faults and alarms

A35904 (F, N) TM: EEPROM
Message value: -
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: An error has occurred accessing the non-volatile memory on the Terminal Module.
Remedy: Replace the Terminal Module.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35905 (F, N) TM: Parameter access
Message value: -
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The Control Unit attempted to write an illegal parameter value to the Terminal Module.
Remedy: - check whether the firmware version of the Terminal Module (r0158) matches the firmware version of Control Unit (r0018).
- if required, replace the Terminal Module.
Note: The firmware versions that match each other are in the readme.txt file on the memory card.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35906 (F, N) TM: 24 V power supply missing
Message value: %1
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The 24 V power supply for the digital outputs is missing.
Alarm value (r2124, interpret hexadecimal):
01: TM17 24 V power supply for DI/DO 0 ... 7 missing.
02: TM17 24 V power supply for DI/DO 8 ... 15 missing.
04: TM15 24 V power supply for DI/DO 0 ... 7 (X520) missing.
08: TM15 24 V power supply for DI/DO 8 ... 15 (X521) missing.
10: TM15 24 V power supply for DI/DO 16 ... 23 (X522) missing.
20: TM41 24 V power supply for DI/DO 0 ... 3 missing.
Remedy: Check the terminals for the power supply voltage (L1+, L2+, L3+, M or +24 V_1 for TM41).
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35907 (F, N) TM: Hardware initialization error
Message value: %1
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The Terminal Module was not successfully initialized.
List of faults and alarms

Alarm value (r2124, interpret hexadecimal):
01: TM17 or TM41 - incorrect configuration request.
02: TM17 or TM41 - programming not successful.
04: TM17 or TM41 - invalid time stamp

Remedy: Carry out a POWER ON.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35910 (F, N) TM: Module overtemperature
Message value: -
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The temperature in the module has exceeded the highest permissible limit.
Remedy: - reduce the ambient temperature.
- replace the Terminal Module.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35911 (F, N) TM: Clock synchronous operation sign-of-life missing
Message value: -
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The maximum permissible number of errors in the master sign-of-life (clock synchronous operation) has been exceeded in cyclic operation.
When the alarm is output, the module outputs are reset up to the next synchronization.
Remedy: - check the physical bus configuration (terminating resistor, shielding, etc.).
- check the interconnection of the master sign-of-life (r4201 via p0915).
- check whether the master correctly sends the sign-of-life (e.g. set up a trace with r4201.12 ... r4201.15 and trigger signal r4301.9).
- check the bus and master for utilization level (e.g. bus cycle time Tdp was set too short).

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35920 (F, N) TM: Error temperature sensor channel 0
Message value: %1
Drive object: B_INF, TM150, TM31, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy: - make sure that the sensor is connected correctly.
- replace the sensor.
Faults and alarms

List of faults and alarms

A35921 (F, N)  TM: Error temperature sensor channel 1

Message value:  %1
Drive object:  B_INF, TM150, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:  - make sure that the sensor is connected correctly.
          - replace the sensor.
Reaction upon F:  NONE
Acknowl. upon F:  IMMEDIATELY (POWER ON)
Reaction upon N:  NONE
Acknowl. upon N:  NONE

A35922 (F, N)  TM: Error temperature sensor channel 2

Message value:  %1
Drive object:  B_INF, TM150, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:  - make sure that the sensor is connected correctly.
          - replace the sensor.
Reaction upon F:  NONE
Acknowl. upon F:  IMMEDIATELY (POWER ON)
Reaction upon N:  NONE
Acknowl. upon N:  NONE

A35923 (F, N)  TM: Error temperature sensor channel 3

Message value:  %1
Drive object:  B_INF, TM150, VECTOR_G
Reaction:  NONE
Acknowledge:  NONE
Cause:  When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 1630 Ohm (TM150: R > 2170 Ohm), PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 50 Ohm (TM150: R < 180 Ohm), PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:  - make sure that the sensor is connected correctly.
          - replace the sensor.
Faults and alarms

List of faults and alarms

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35924 (F, N) TM: Error temperature sensor channel 4
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35925 (F, N) TM: Error temperature sensor channel 5
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35926 (F, N) TM: Error temperature sensor channel 6
Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (%2124, interpret decimal):
1: Wire breakage or sensor not connected.
   KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
   PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm
Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Faults and alarms

List of faults and alarms

A35927 (F, N) TM: Error temperature sensor channel 7

Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.

Reaction upon F: NONE
Acknow. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknow. upon N: NONE

A35928 (F, N) TM: Error temperature sensor channel 8

Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.

Reaction upon F: NONE
Acknow. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknow. upon N: NONE

A35929 (F, N) TM: Error temperature sensor channel 9

Message value: %1
Drive object: B_INF, TM150, VECTOR_G
Reaction: NONE
Acknowledge: NONE

Cause: When evaluating the temperature sensor, an error occurred.
Alarm value (r2124, interpret decimal):
1: Wire breakage or sensor not connected.
KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
2: Measured resistance too low.
PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm

Remedy:
- make sure that the sensor is connected correctly.
- replace the sensor.

Reaction upon F: NONE
Acknow. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknow. upon N: NONE
### A35930 (F, N) TM: Error temperature sensor channel 10

**Message value:** %1  
**Drive object:** B_INF, TM150, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** When evaluating the temperature sensor, an error occurred.  
Alarm value (r2124, interpret decimal):
- 1: Wire breakage or sensor not connected.
- KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
- 2: Measured resistance too low.
- PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm  
**Remedy:**  
- make sure that the sensor is connected correctly.  
- replace the sensor.

**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A35931 (F, N) TM: Error temperature sensor channel 11

**Message value:** %1  
**Drive object:** B_INF, TM150, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** When evaluating the temperature sensor, an error occurred.  
Alarm value (r2124, interpret decimal):
- 1: Wire breakage or sensor not connected.
- KTY84: R > 2170 Ohm, PT100: R > 194 Ohm, PT1000: R > 1944 Ohm
- 2: Measured resistance too low.
- PTC thermistor: R < 20 Ohm, KTY84: R < 180 Ohm, PT100: R < 60 Ohm, PT1000: R < 603 Ohm  
**Remedy:**  
- make sure that the sensor is connected correctly.  
- replace the sensor.

**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### F35950 TM: Internal software error

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (NONE)  
**Acknowledge:** POWER ON  
**Cause:** An internal software error has occurred.  
Fault value (r0949, interpret decimal):
- Information about the fault source.
- Only for internal Siemens troubleshooting.

**Remedy:**  
- If necessary, upgrade the firmware in the Terminal Module to a later version.  
- contact the Hotline.

### A35999 (F, N) TM: Unknown alarm

**Message value:** New message: %1  
**Drive object:** B_INF, TM150, TM31, TM54F_MA, TM54F_SL, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An alarm has occurred on the Terminal Module that cannot be interpreted by the Control Unit firmware.  
This can occur if the firmware on this component is more recent than the firmware on the Control Unit.
Faults and alarms

List of faults and alarms

Alarm value (r2124, interpret decimal):
Alarm number.
Note:
If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.

Remedy:
- replace the firmware on the Terminal Module by an older firmware version (r0158).
- upgrade the firmware on the Control Unit (r0018).

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)

Acknowl. upon F: IMMEDIATELY (POWER ON)

Reaction upon N: NONE
Acknowl. upon N: NONE

F36207 (N, A) Hub: Overtemperature component
Message value: %1
Drive object: B_INF, HUB, VECTOR_G
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual temperature in 0.1 °C resolution.

Remedy:
- Check ambient temperature at component installation location.
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A36211 (F, N) Hub: Overtemperature alarm component
Message value: %1
Drive object: B_INF, HUB, VECTOR_G
Reaction: NONE
Acknowledge: NONE
Cause: The temperature on the DRIVE-CLiQ Hub Module has exceeded the alarm threshold.
Alarm value (r2124, interpret decimal):
Actual temperature in 0.1 °C resolution.

Remedy:
- Check ambient temperature at component installation location.
- replace the component involved.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F36214 (N, A) Hub: overvoltage fault 24 V supply
Message value: %1
Drive object: B_INF, HUB, VECTOR_G
Reaction: NONE (OFF1, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The 24 V power supply on the DRIVE-CLiQ Hub Module has exceeded the fault threshold.
Fault value (r0949, interpret decimal):
Actual operating voltage in 0.1 °C resolution

Remedy:
- check the supply voltage of the component involved.
- replace the component involved.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### F36216 (N, A) Hub: undervoltage fault 24 V supply

**Message value:** %1
**Drive object:** B_INF, HUB, VECTOR_G
**Reaction:** NONE (OFF1, OFF2)
**Acknowledge:** IMMEDIATELY (POWER ON)
**Cause:** The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the fault threshold.
- Fault value (r0949, interpret decimal):
  - Actual operating voltage in 0.1 °C resolution
**Remedy:**
- check the supply voltage of the component involved.
- replace the component involved.
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

### A36217 (N) Hub: undervoltage alarm 24 V supply

**Message value:** %1
**Drive object:** B_INF, HUB, VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** The 24 V power supply on the DRIVE-CLiQ Hub Module has undershot the alarm threshold.
- Alarm value (r2124, interpret decimal):
  - Actual operating voltage in 0.1 °C resolution
**Remedy:**
- check the supply voltage of the component involved.
- replace the component involved.
**Reaction upon N:** NONE
**Acknowl. upon N:** NONE

### N36800 (F) Hub: Group signal

**Message value:** -
**Drive object:** B_INF, HUB, VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** The DRIVE-CLiQ Hub Module has detected at least one fault.
**Remedy:** Evaluates other actual messages.
**Reaction upon F:** NONE
**Acknowl. upon F:** IMMEDIATELY

### A36801 (F, N) Hub DRIVE-CLiQ: Sign-of-life missing

**Message value:** Component number: %1, fault cause: %2
**Drive object:** B_INF, HUB, VECTOR_G
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved.
- Fault cause:
  - 10 (= 0A hex):
    - The sign-of-life bit in the receive telegram is not set.
    - The individual information is coded as follows in the message value (r0949/r2124):
      - 0000yyxx hex: yy = component number, xx = error cause
**Remedy:**
- check the DRIVE-CLiQ connection.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
**Reaction upon F:** NONE
**Acknowl. upon F:** IMMEDIATELY
**Faults and alarms**

**List of faults and alarms**

---

**F36802 (N, A) Hub: Time slice overflow**

- **Message value:** %1
- **Drive object:** B_INF, HUB, VECTOR_G
- **Reaction:** Infeed: OFF2 (NONE)
  Vector: NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** A time slice overflow has occurred on the DRIVE-CLiQ Hub Module.
  Fault value (r0949, interpret decimal):
  xx: Time slice number xx
- **Remedy:**
  - Reduce the current controller frequency.
  - Carry out a POWER ON (power off/on) for all components.
  - Upgrade firmware to later version.
  - Contact the Hotline.

---

**F36804 (N, A) Hub: Checksum error**

- **Message value:** %1
- **Drive object:** B_INF, HUB, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** A checksum error has occurred when reading out the program memory on the DRIVE-CLiQ Hub Module.
  Alarm value (r2124, interpret hexadecimal):
  Difference between the checksum at POWER ON and the actual checksum.
- **Remedy:**
  - Check whether the permissible ambient temperature for the component is maintained.
  - Replace the DRIVE-CLiQ Hub Module.

---

**A36805 (F, N) Hub: EEPROM checksum incorrect**

- **Message value:** %1
- **Drive object:** B_INF, HUB, VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The internal parameter data on the DRIVE-CLiQ Hub Module is incorrect.
  Alarm value (r2124, interpret hexadecimal):
  01: EEPROM access error.
  02: Too many blocks in the EEPROM.
- **Remedy:**
  - Check whether the permissible ambient temperature for the component is maintained.
  - Replace the DRIVE-CLiQ Hub Module.
## F36820 Hub DRIVE-CLiQ: Telegram error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, HUB, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved. Fault cause: 1 (= 01 hex): Checksum error (CRC error). 2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list. 3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list. 4 (= 04 hex): The length of the receive telegram does not match the receive list. 5 (= 05 hex): The type of the receive telegram does not match the receive list. 6 (= 06 hex): The address of the component in the telegram and in the receive list do not match. 7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram. 8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one. 9 (= 09 hex): The error bit in the receive telegram is set. 16 (= 10 hex): The receive telegram is too early. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- carry out a POWER ON (power off/on). - check the electrical cabinet design and cable routing for EMC compliance - check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...). See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
</tr>
</tbody>
</table>

## F36835 Hub DRIVE-CLiQ: Cyclic data transfer error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object:</td>
<td>B_INF, HUB, VECTOR_G</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved. The nodes do not send and receive in synchronism. Fault cause: 33 (= 21 hex): The cyclic telegram has not been received. 34 (= 22 hex): Timeout in the telegram receive list. 64 (= 40 hex): Timeout in the telegram send list. Note regarding the message value: The individual information is coded as follows in the message value (r0949/r2124): 0000yyxx hex: yy = component number, xx = error cause</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- carry out a POWER ON. - replace the component involved. See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
</tr>
</tbody>
</table>
### F36836 Hub DRIVE-CLiQ: Send error for DRIVE-CLiQ data

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved. Data were not able to be sent.  
Fault cause:  
65 (= 41 hex): Telegram type does not match send list.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Carry out a POWER ON.

### F36837 Hub DRIVE-CLiQ: Component fault

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.  
Fault cause:  
32 (= 20 hex): Error in the telegram header.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts,...).  
- check the electrical cabinet design and cable routing for EMC compliance  
- if required, use another DRIVE-CLiQ socket (p9904).  
- replace the component involved.

### F36845 Hub DRIVE-CLiQ: Cyclic data transfer error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the DRIVE-CLiQ Hub Module involved.  
Fault cause:  
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Carry out a POWER ON.  
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)
## F36851 Hub DRIVE-CLiQ (CU): Sign-of-life missing

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, TM150, TM31, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit. The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.  
**Fault cause:**  
10 (= 0A hex): The sign-of-life bit in the receive telegram is not set.  
**Note regarding the message value:**  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Upgrade the firmware of the component involved.

## F36860 Hub DRIVE-CLiQ (CU): Telegram error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, TM150, TM31, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit.  
**Fault cause:**  
1 (= 01 hex): Checksum error (CRC error).  
2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.  
3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.  
4 (= 04 hex): The length of the receive telegram does not match the receive list.  
5 (= 05 hex): The type of the receive telegram does not match the receive list.  
6 (= 06 hex): The address of the power unit in the telegram and in the receive list do not match.  
9 (= 09 hex): The error bit in the receive telegram is set.  
16 (= 10 hex): The receive telegram is too early.  
17 (= 11 hex): CRC error and the receive telegram is too early.  
18 (= 12 hex): The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.  
19 (= 13 hex): The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.  
20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early.  
21 (= 15 hex): The type of the receive telegram does not match the receive list and the receive telegram is too early.  
22 (= 16 hex): The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.  
25 (= 19 hex): The error bit in the receive telegram is set and the receive telegram is too early.  
**Note regarding the message value:**  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- carry out a POWER ON (power off/on).  
- check the electrical cabinet design and cable routing for EMC compliance  
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
### Faults and alarms

#### List of faults and alarms

**F36875**  
**HUB DRIVE-CLiQ (CU): Supply voltage failed**

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, TM150, TM31, VECTOR_G  
**Reaction:** OFF1 (OFF2)  
**Acknowledge:** IMMEDIATELY  
**Cause:** The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.  
Fault cause:  
9 (= 09 hex): The power supply voltage for the components has failed.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- carry out a POWER ON (power off/on).  
- check the power supply voltage wiring for the DRIVE-CLiQ component (interrupted cable, contacts, ...).  
- check the dimensioning of the power supply for the DRIVE-CLiQ component.

**F36885**  
**Hub DRIVE-CLiQ (CU): Cyclic data transfer error**

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, TM150, TM31, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to the Control Unit.  
The nodes do not send and receive in synchronism.  
Fault cause:  
26 (= 1A hex): Sign-of-life bit in the receive telegram not set and the receive telegram is too early.  
33 (= 21 hex): The cyclic telegram has not been received.  
34 (= 22 hex): Timeout in the telegram receive list.  
64 (= 40 hex): Timeout in the telegram send list.  
98 (= 62 hex): Error at the transition to cyclic operation.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:**  
- check the supply voltage of the component involved.  
- carry out a POWER ON.  
- replace the component involved.

**F36886**  
**Hub DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data**

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** B_INF, HUB, TM150, TM31, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit.  
Data were not able to be sent.  
Fault cause:  
65 (= 41 hex): Telegram type does not match send list.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** Carry out a POWER ON.
F36887  Hub DRIVE-CLiQ (CU): Component fault
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, HUB, TM150, TM31, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  Fault detected on the DRIVE-CLiQ component (DRIVE-CLiQ Hub Module) involved. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex): Error in the telegram header.
96 (= 60 hex): Response received too late during runtime measurement.
97 (= 61 hex): Time taken to exchange characteristic data too long.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F36895  Hub DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value:  Component number: %1, fault cause: %2
Drive object:  B_INF, HUB, TM150, TM31, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  DRIVE-CLiQ communication error from DRIVE-CLiQ Hub Module in question to Control Unit.
Fault cause:
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).

F36896  Hub DRIVE-CLiQ (CU): Inconsistent component properties
Message value:  Component number: %1
Drive object:  B_INF, HUB, TM150, TM31, VECTOR_G
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  The properties of the DRIVE-CLiQ component (DRIVE-CLiQ Hub Module), specified by the fault value, have changed in an incompatible fashion with respect to the properties when booted. One cause can be, e.g. that a DRIVE-CLiQ cable or DRIVE-CLiQ component has been replaced.
Fault value (r0949, interpret decimal):
Component number.
Remedy:
- carry out a POWER ON.
- when a component is replaced, the same component type and if possible the same firmware version should be used.
- when a cable is replaced, only cables whose length is the same as or as close as possible to the length of the original cables should be used (ensure compliance with the maximum cable length).
### F36899 (N, A)  Hub: Unknown fault

**Message value:** New message: %1  
**Drive object:** B_INF, HUB, VECTOR_G  
**Reaction:** Infed: NONE (OFF1, OFF2)  
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowledge:** IMMEDIATELY (POWER ON)  
**Cause:** A fault occurred on the DRIVE-CLiQ Hub Module that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Fault value (r0949, interpret decimal): Fault number.  
Note: If required, the significance of this new fault can be read about in a more recent description of the Control Unit.  
**Remedy:**  
- replace the firmware on the DRIVE-CLiQ Hub Module with older firmware (r0158).  
- upgrade the firmware on the Control Unit (r0018).  

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F36950  Hub: Internal software error

**Message value:** %1  
**Drive object:** VECTOR_G  
**Reaction:** OFF2 (NONE)  
**Acknowledge:** POWER ON  
**Cause:** An internal software error has occurred. Fault value (r0949, interpret decimal): Information about the fault source. Only for internal Siemens troubleshooting.  
**Remedy:**  
- if required, upgrade the firmware in the DRIVE-CLiQ hub module to a more recent version.  
- contact the Hotline.

### A36999 (F, N)  Hub: Unknown alarm

**Message value:** New message: %1  
**Drive object:** B_INF, HUB, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An alarm occurred on the DRIVE-CLiQ Hub Module that cannot be interpreted by the Control Unit firmware. This can occur if the firmware on this component is more recent than the firmware on the Control Unit. Alarm value (r2124, interpret decimal): Alarm number.  
Note: If required, the significance of this new alarm can be read about in a more recent description of the Control Unit.  
**Remedy:**  
- replace the firmware on the DRIVE-CLiQ Hub Module with older firmware (r0158).  
- upgrade the firmware on the Control Unit (r0018).  

**Reaction upon F:** Infed: NONE (OFF1, OFF2)  
Vector: NONE (IASC/DCBRAKE, OFF1, OFF2, OFF3, STOP1, STOP2)  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### F40000  Fault at DRIVE-CLiQ socket X100

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** A fault has occurred at the drive object at the DRIVE-CLiQ socket X100.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.

Remedy:
Evaluate the fault buffer of the specified object.

F40001  Fault at DRIVE-CLiQ socket X101
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred at the drive object at the DRIVE-CLiQ socket X101.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy:
Evaluate the fault buffer of the specified object.

F40002  Fault at DRIVE-CLiQ socket X102
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred at the drive object at the DRIVE-CLiQ socket X102.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy:
Evaluate the fault buffer of the specified object.

F40003  Fault at DRIVE-CLiQ socket X103
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred at the drive object at the DRIVE-CLiQ socket X103.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy:
Evaluate the fault buffer of the specified object.

F40004  Fault at DRIVE-CLiQ socket X104
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred at the drive object at the DRIVE-CLiQ socket X104.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy:
Evaluate the fault buffer of the specified object.

F40005  Fault at DRIVE-CLiQ socket X105
Message value:  %1
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  A fault has occurred at the drive object at the DRIVE-CLiQ socket X105.
Fault value (r0949, interpret decimal):
First fault that has occurred for this drive object.
Remedy:
Evaluate the fault buffer of the specified object.
## Faults and alarms

### List of faults and alarms

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<thead>
<tr>
<th>A40100</th>
<th>Alarm at DRIVE-CLiQ socket X100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>An alarm has occurred at the drive object at the DRIVE-CLiQ socket X100. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the alarm buffer of the specified object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A40101</th>
<th>Alarm at DRIVE-CLiQ socket X101</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>An alarm has occurred at the drive object at the DRIVE-CLiQ socket X101. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the alarm buffer of the specified object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A40102</th>
<th>Alarm at DRIVE-CLiQ socket X102</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>An alarm has occurred at the drive object at the DRIVE-CLiQ socket X102. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the alarm buffer of the specified object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A40103</th>
<th>Alarm at DRIVE-CLiQ socket X103</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>An alarm has occurred at the drive object at the DRIVE-CLiQ socket X103. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the alarm buffer of the specified object.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A40104</th>
<th>Alarm at DRIVE-CLiQ socket X104</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>An alarm has occurred at the drive object at the DRIVE-CLiQ socket X104. Alarm value (r2124, interpret decimal): First alarm that has occurred for this drive object.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the alarm buffer of the specified object.</td>
</tr>
</tbody>
</table>
### A40105  Alarm at DRIVE-CLiQ socket X105

**Message value:** %1  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An alarm has occurred at the drive object at the DRIVE-CLiQ socket X105.  
Alarm value (%2124, interpret decimal):  
First alarm that has occurred for this drive object.  
**Remedy:** Evaluate the alarm buffer of the specified object.

### F40799  CX32: Configured transfer end time exceeded

**Message value:** -  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The configured transfer end time when transferring the cyclic actual values was exceeded.  
**Remedy:** - carry out a POWER ON (power off/on) for all components.  
- contact the Hotline.

### F40801  CX32 DRIVE-CLiQ: Sign-of-life missing

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** All objects  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved.  
Fault cause:  
10 (= 0A hex):  
The sign-of-life bit in the receive telegram is not set.  
Note regarding the message value:  
The individual information is coded as follows in the message value (r0949/r2124):  
0000yyxx hex: yy = component number, xx = error cause  
**Remedy:** - carry out a POWER ON (power off/on).  
- replace the component involved.  
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

### F40820  CX32 DRIVE-CLiQ: Telegram error

**Message value:** Component number: %1, fault cause: %2  
**Drive object:** All objects  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved.  
Fault cause:  
1 (= 01 hex):  
Checksum error (CRC error).  
2 (= 02 hex):  
Telegram is shorter than specified in the length byte or in the receive list.  
3 (= 03 hex):  
Telegram is longer than specified in the length byte or in the receive list.  
4 (= 04 hex):  
The length of the receive telegram does not match the receive list.  
5 (= 05 hex):  
The type of the receive telegram does not match the receive list.  
6 (= 06 hex):  
The address of the component in the telegram and in the receive list do not match.  
7 (= 07 hex):  
A SYNC telegram is expected - but the received telegram is not a SYNC telegram.  
8 (= 08 hex):  
No SYNC telegram is expected - but the received telegram is one.
Faults and alarms

List of faults and alarms

9 (= 09 hex):
The error bit in the receive telegram is set.

16 (= 10 hex):
The receive telegram is too early.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F40825  CX32 DRIVE-CLiQ: Supply voltage failed
Message value:  Component number: %1, fault cause: %2
Drive object:   All objects
Reaction:      OFF1 (OFF2)
Acknowledge:   IMMEDIATELY
Cause:         The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.
Fault cause:
9 (= 09 hex):
The power supply voltage for the components has failed.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the supply voltage wiring of the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the DRIVE-CLiQ component power supply.

F40835  CX32 DRIVE-CLiQ: Cyclic data transfer error
Message value:  Component number: %1, fault cause: %2
Drive object:   All objects
Reaction:      OFF2
Acknowledge:   IMMEDIATELY
Cause:         A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. The nodes do not send and receive in synchronism.
Fault cause:
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F40836  CX32 DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value:  Component number: %1, fault cause: %2
Drive object:   All objects
Reaction:      OFF2
Acknowledge:   IMMEDIATELY
Cause:         A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON (power off/on).

F40837 CX32 DRIVE-CLiQ: Component fault
Message value: Component number: %1, fault cause: %2
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F40845 CX32 DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
A DRIVE-CLiQ communications error has occurred from the Control Unit to the controller extension involved.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON (power off/on).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F40851 CX32 DRIVE-CLiQ (CU): Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY

Cause:
A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
The DRIVE-CLiQ component did not set the sign-of-life to the Control Unit.
Fault cause:
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Faults and alarms

List of faults and alarms

Remedy: Upgrade the firmware of the component involved.

### F40860 CX32 DRIVE-CLiQ (CU): Telegram error

**Message value:** Component number: %1, fault cause: %2

**Drive object:** All objects

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.

Fault cause:
- 1 (= 01 hex): Checksum error (CRC error).
- 2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.
- 3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.
- 4 (= 04 hex): The length of the receive telegram does not match the receive list.
- 5 (= 05 hex): The type of the receive telegram does not match the receive list.
- 6 (= 06 hex): The address of the power unit in the telegram and in the receive list do not match.
- 9 (= 09 hex): The error bit in the receive telegram is set.
- 16 (= 10 hex): The receive telegram is too early.
- 17 (= 11 hex): CRC error and the receive telegram is too early.
- 18 (= 12 hex): The telegram is shorter than that specified in the length byte or in the receive list and the receive telegram is too early.
- 19 (= 13 hex): The telegram is longer than that specified in the length byte or in the receive list and the receive telegram is too early.
- 20 (= 14 hex): The length of the receive telegram does not match the receive list and the receive telegram is too early.
- 21 (= 15 hex): The type of the receive telegram does not match the receive list and the receive telegram is too early.
- 22 (= 16 hex): The address of the power unit in the telegram and in the receive list does not match and the receive telegram is too early.
- 25 (= 19 hex): The error bit in the receive telegram is set and the receive telegram is too early.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause

**Remedy:**
- carry out a POWER ON (power off/on).
- check the electrical cabinet design and cable routing for EMC compliance
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).

See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

### F40875 CX32 DRIVE-CLiQ (CU): Supply voltage failed

**Message value:** Component number: %1, fault cause: %2

**Drive object:** All objects

**Reaction:** OFF1 (OFF2)

**Acknowledge:** IMMEDIATELY

**Cause:** The DRIVE-CLiQ communication from the DRIVE-CLiQ component involved to the Control Unit signals that the supply voltage has failed.

Fault cause:
- 9 (= 09 hex): The power supply voltage for the components has failed.

Note regarding the message value:

The individual information is coded as follows in the message value (r0949/r2124):

0000yyxx hex: yy = component number, xx = error cause
Remedy:
- carry out a POWER ON (power off/on).
- check the supply voltage wiring of the DRIVE-CLiQ component (interrupted cable, contacts, ...).
- check the dimensioning of the DRIVE-CLiQ component power supply.

F40885  CX32 DRIVE-CLiQ (CU): Cyclic data transfer error
Message value:  Component number: %1, fault cause: %2
Drive object:  All objects
Reaction:  OFF2
Acknowledge: IMMEDIATELY
Cause:  A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit. The nodes do not send and receive in synchronism.
Fault cause:
26 (= 1A hex):
Sign-of-life bit in the receive telegram not set and the receive telegram is too early.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
64 (= 40 hex):
Timeout in the telegram send list.
98 (= 62 hex):
Error at the transition to cyclic operation.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
- check the power supply voltage of the component involved.
- carry out a POWER ON (power off/on).
- replace the component involved.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F40886  CX32 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data
Message value:  Component number: %1, fault cause: %2
Drive object:  All objects
Reaction:  OFF2
Acknowledge: IMMEDIATELY
Cause:  A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit. Data were not able to be sent.
Fault cause:
65 (= 41 hex):
Telegram type does not match send list.
Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause
Remedy:
carry out a POWER ON (power off/on).

F40887  CX32 DRIVE-CLiQ (CU): Component fault
Message value:  Component number: %1, fault cause: %2
Drive object:  All objects
Reaction:  OFF2
Acknowledge: IMMEDIATELY
Cause:  Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
Fault cause:
32 (= 20 hex):
Error in the telegram header.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
Faults and alarms

List of faults and alarms

96 (= 60 hex):
Response received too late during runtime measurement.
97 (= 61 hex):
Time taken to exchange characteristic data too long.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
- check the electrical cabinet design and cable routing for EMC compliance
- if required, use another DRIVE-CLiQ socket (p9904).
- replace the component involved.

F40895
CX32 DRIVE-CLiQ (CU): Cyclic data transfer error

Message value:
Component number: %1, fault cause: %2

Drive object:
All objects

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
Fault cause:
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

Note regarding the message value:
The individual information is coded as follows in the message value (r0949/r2124):
0000yyxx hex: yy = component number, xx = error cause

Remedy:
Carry out a POWER ON (power off/on).
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

F49150
Cooling unit: Fault occurred

Message value:
- 

Drive object:
B_INF, VECTOR_G

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
The cooling unit signals a general fault.

Remedy:
- check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the external control device for the cooling unit.
See also: p0266 (Cooling unit, feedback signals, signal source)

F49151
Cooling unit: Conductivity has exceeded the fault threshold

Message value:
- 

Drive object:
B_INF, VECTOR_G

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
The conductivity of the cooling liquid has exceeded the selected fault threshold (p0269[2])
See also: p0261 (Cooling unit, starting time 2), p0262 (Cooling unit, fault conductivity delay time), p0266 (Cooling unit, feedback signals, signal source)

Remedy:
Check the device to de-ionize the cooling liquid.

F49152
Cooling unit: ON command feedback signal missing

Message value:
- 

Drive object:
B_INF, VECTOR_G

Reaction:
OFF2

Acknowledge:
IMMEDIATELY

Cause:
The feedback signal of the ON command of the cooling unit is missing.
- after the ON command, the feedback signal has not been received within the selected starting time (p0260).
- the feedback signal has failed in operation.
See also: p0260 (Cooling unit, starting time 1), r0267 (Cooling unit status word)

Remedy:
- check the wiring between the cooling unit and the input terminal (Terminal Module).
- check the external control device for the cooling unit.
### F49153 Cooling unit: Liquid flow too low

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The drive converter cooling unit signals that the cooling liquid flow is too low.  
- after the ON command, the feedback signal has not been received within the selected starting time (p0260).  
- in operation, the feedback signal has failed for longer than the permitted failure time (p0263).  
See also: p0260 (Cooling unit, starting time 1), p0263 (Cooling unit fault liquid flow, delay time), r0267 (Cooling unit status word)  
**Remedy:**  
- check the wiring between the cooling unit and the input terminal (Terminal Module).  
- check the external control device for the cooling unit.

### F49154 (A) Cooling unit: Liquid leak is present

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The liquid leakage monitoring function has responded.  
**Caution:**  
If this fault is re-parameterized as an alarm then using other monitoring functions it must be ensured that when cooling water is lost, the drive is powered down!  
See also: r0267 (Cooling unit status word)  
**Remedy:**  
- check the cooling system for leaks in the cooling circuit.  
- check the wiring of the input terminal (Terminal Module) used to monitor leaking fluid.  
**Reaction upon A:** NONE  
**Acknowl. upon A:** NONE

### F49155 Cooling unit: Power Stack Adapter, firmware version too old

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** POWER ON  
**Cause:** The firmware version in the Power Stack Adapter (PSA) is too old and does not support the liquid cooling.  
**Remedy:** Upgrade the firmware. Check EEPROM data.

### F49156 Cooling unit: Cooling liquid temperature has exceeded the fault threshold

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** The cooling liquid intake temperature has exceeded the permanently set fault threshold.  
**Remedy:** Check the cooling system and the ambient conditions.

### A49170 Cooling unit: Alarm has occurred

**Message value:** -  
**Drive object:** B_INF, VECTOR_G  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The cooling unit signals a general alarm.  
**Remedy:**  
- check the wiring between the cooling unit and the input terminal (Terminal Module).  
- check the external control device for the cooling unit.
**Faults and alarms**

**List of faults and alarms**

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message value</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A49171</td>
<td>Cooling unit: Conductivity has exceeded the alarm threshold</td>
<td>-</td>
<td>B_INF</td>
<td>NONE</td>
<td>NONE</td>
<td>The conductivity of the cooling liquid has exceeded the selected alarm threshold (p0269[1]). The threshold cannot be set higher than the fault threshold specified in the equipment description.</td>
<td>Check the device to de-ionize the cooling liquid.</td>
</tr>
<tr>
<td>A49171</td>
<td>Cooling unit: Conductivity has exceeded the alarm threshold</td>
<td>-</td>
<td>VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>Conductivity monitoring is set for the cooling liquid (r0267.7, from p0266[7]). See also: p0261 (Cooling unit, starting time 2), p0262 (Cooling unit, fault conductivity delay time), p0266 (Cooling unit, feedback signals, signal source), r0267 (Cooling unit status word)</td>
<td>Check the device to de-ionize the cooling liquid.</td>
</tr>
<tr>
<td>A49172</td>
<td>Cooling unit: Conductivity actual value is not valid</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>When monitoring the conductivity of the cooling liquid, there is a fault in the wiring or in the sensor.</td>
<td>- check the wiring between the cooling unit and the Power Stack Adapter (PSA). - check the function of the sensor to measure the conductivity.</td>
</tr>
<tr>
<td>A49173</td>
<td>Cooling unit: Cooling liquid temperature has exceeded the alarm threshold</td>
<td>-</td>
<td>B_INF, VECTOR_G</td>
<td>NONE</td>
<td>NONE</td>
<td>The cooling liquid intake temperature has exceeded the specified alarm threshold.</td>
<td>Check the cooling system and the ambient conditions.</td>
</tr>
<tr>
<td>F49200</td>
<td>Excitation group signal fault</td>
<td>%1</td>
<td>VECTOR_G</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The excitation sequence control signals a fault. Fault value (r0949, interpret hexadecimal): Bit 0: When powered down or when powering down the excitation, the signal &quot;excitation ready feedback signal&quot; was not received within the monitoring time. Bit 1: After an ON command, the signal &quot;excitation ready feedback signal&quot; was not received within the monitoring time. Bit 2: After the pulses were enabled, the signal &quot;excitation operational feedback signal&quot; was not received within the monitoring time. Bit 3: The &quot;excitation group signal fault&quot; signal is present.</td>
<td>- check the excitation. - check commands, feedback signals and BICO interconnections.</td>
</tr>
</tbody>
</table>
### A49201 (F) Excitation group signal alarm

- **Message value:** -
- **Drive object:** VECTOR_G
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The "excitation group signal alarm" signal is present.
- **Remedy:** Check the excitation equipment.
- **Reaction upon F:** NONE
- **Acknowl. upon F:** IMMEDIATELY

### A50001 (F) COMM BOARD: Alarm 1

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  - CBE20:
    - A PROFINET controller attempts to establish a connection using an incorrect configuring telegram. The "Shared Device" function has been activated (p8829 = 2).
    - Alarm value (r2124, interpret decimal):
      - 10: A CPU sends a PROFIsafe telegram.
      - 11: F CPU sends a PZD telegram.
      - 12: F CPU without an A CPU.
      - 13: F CPU with more PROFIsafe subslots than activated with p9601.3.
      - 14: F CPU with fewer PROFIsafe subslots than activated with p9601.3.
      - 15: PROFIsafe telegram of the F-CPU does not match the setting in p60022.
  - See also: p8829 (CBE20 remote controller number), p9601 (SI enable, functions integrated in the drive (Control Unit))
- **Remedy:**
  - CBE20:
    - Check the configuration of the PROFINET controllers as well as the p8829 and p9601.3 setting.
- **Reaction upon F:**
  - Infeed: NONE (OFF1, OFF2)
  - Vector: NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY

### A50002 (F) COMM BOARD: Alarm 2

- **Message value:** %1
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  - In the case of CBE20 SINAMICS Link:
    - A specific telegram word (send) is being used twice.
  - Alarm value (r2124, interpret decimal):
    - Telegram word used twice
  - See also: p8871 (SINAMICS Link send telegram word PZD)
- **Remedy:**
  - In the case of CBE20 SINAMICS Link:
    - Correct the parameter assignment.
  - See also: p8871 (SINAMICS Link send telegram word PZD)
- **Reaction upon F:**
  - Infeed: NONE (OFF1, OFF2)
  - Vector: NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY

### A50003 (F) COMM BOARD: Alarm 3

- **Message value:** Info. 1: %1, info. 2: %2
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:**
  - In the case of CBE20 SINAMICS Link:
    - A specific telegram word (receive) is being used twice.
**Faults and alarms**

**List of faults and alarms**

Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Address of sender
Info. 2 (decimal) = Receive telegram word
See also: p8870 (SINAMICS Link receive telegram word PZD), p8872 (SINAMICS Link address receive PZD)

**Remedy:**
In the case of CBE20 SINAMICS Link:
correct the parameter assignment.

**Reaction upon F:**
Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

<table>
<thead>
<tr>
<th>A50004 (F)</th>
<th>COMM BOARD: Alarm 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Info. 1: %1, info. 2: %2</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

**Cause:**
In the case of CBE20 SINAMICS Link:
Telegram word (receive) and address of sender inconsistent. Both values have to be either equal to zero or not equal to zero.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Drive object number from p8870, p8872
Info. 2 (decimal) = Index from p8870, p8872
See also: p8870 (SINAMICS Link receive telegram word PZD), p8872 (SINAMICS Link address receive PZD)

**Remedy:**
In the case of CBE20 SINAMICS Link:
correct the parameter assignment.

**Reaction upon F:**
Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

<table>
<thead>
<tr>
<th>A50005 (F)</th>
<th>COMM BOARD: Alarm 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

**Cause:**
In the case of CBE20 SINAMICS Link:
Sender not found on SINAMICS Link.
Alarm value (r2124, interpret decimal):
Address of sender that cannot be located
See also: p8872 (SINAMICS Link address receive PZD)

**Remedy:**
In the case of CBE20 SINAMICS Link:
Check the connection to the sender.

**Reaction upon F:**
Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

<table>
<thead>
<tr>
<th>A50006 (F)</th>
<th>COMM BOARD: Alarm 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Info. 1: %1, info. 2: %2</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>NONE</td>
</tr>
</tbody>
</table>

**Cause:**
In the case of CBE20 SINAMICS Link:
The parameter assignment indicates that the sender and the receiver are one and the same. This is not permitted.
Alarm value (r2124, interpret hexadecimal):
yyyyxxxx hex: yyyy = info. 1, xxxx = info. 2
Info. 1 (decimal) = Drive object number from p8872
Info. 2 (decimal) = Index from p8872
See also: p8836 (SINAMICS Link address), p8872 (SINAMICS Link address receive PZD)
List of faults and alarms

Remedy: In the case of CBE20 SINAMICS Link:
Correct the parameter assignment. All p8872[index] must be set to a value not equal to p8836.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50010 (F) COMM BOARD: Alarm 10

Message value: %1
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: PROFINET Name of Station is invalid.
Remedy: CBE20:
Correct the name of the station (p8940) and activate (p8945 = 2).
See also: p8940 (CBE20 Name of Station)

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50020 (F) COMM BOARD: Alarm 20

Message value: -
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: CBE20: The PROFINET "Shared Device" function has been activated (p8829 = 2). However, only the connection to a PROFINET controller is present.
See also: p8829 (CBE20 remote controller number)
Remedy: CBE20: Check the configuration of the PROFINET controllers, as well as the p8829 setting.

Reaction upon F: Infeed: NONE (OFF1, OFF2)
Vector: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY
Faults and alarms

List of faults and alarms
Appendix

Contents

A.1 ASCII table (excerpt)  A-1658
The following table includes the decimal and hexadecimal notation of selected ASCII characters.

<table>
<thead>
<tr>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blank</td>
<td>32</td>
<td>20</td>
<td>G</td>
<td>71</td>
<td>47</td>
</tr>
<tr>
<td>*</td>
<td>42</td>
<td>2A</td>
<td>H</td>
<td>72</td>
<td>48</td>
</tr>
<tr>
<td>+</td>
<td>43</td>
<td>2B</td>
<td>I</td>
<td>73</td>
<td>49</td>
</tr>
<tr>
<td>-</td>
<td>45</td>
<td>2D</td>
<td>J</td>
<td>74</td>
<td>4A</td>
</tr>
<tr>
<td>0</td>
<td>48</td>
<td>30</td>
<td>K</td>
<td>75</td>
<td>4B</td>
</tr>
<tr>
<td>1</td>
<td>49</td>
<td>31</td>
<td>L</td>
<td>76</td>
<td>4C</td>
</tr>
<tr>
<td>2</td>
<td>50</td>
<td>32</td>
<td>M</td>
<td>77</td>
<td>4D</td>
</tr>
<tr>
<td>3</td>
<td>51</td>
<td>33</td>
<td>N</td>
<td>78</td>
<td>4E</td>
</tr>
<tr>
<td>4</td>
<td>52</td>
<td>34</td>
<td>O</td>
<td>79</td>
<td>4F</td>
</tr>
<tr>
<td>5</td>
<td>53</td>
<td>35</td>
<td>P</td>
<td>80</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>54</td>
<td>36</td>
<td>Q</td>
<td>81</td>
<td>51</td>
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<td>7</td>
<td>55</td>
<td>37</td>
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<td>82</td>
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</tr>
<tr>
<td>8</td>
<td>56</td>
<td>38</td>
<td>S</td>
<td>83</td>
<td>53</td>
</tr>
<tr>
<td>9</td>
<td>57</td>
<td>39</td>
<td>T</td>
<td>84</td>
<td>54</td>
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<tr>
<td>A</td>
<td>65</td>
<td>41</td>
<td>U</td>
<td>85</td>
<td>55</td>
</tr>
<tr>
<td>B</td>
<td>66</td>
<td>42</td>
<td>V</td>
<td>86</td>
<td>56</td>
</tr>
<tr>
<td>C</td>
<td>67</td>
<td>43</td>
<td>W</td>
<td>87</td>
<td>57</td>
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<td>D</td>
<td>68</td>
<td>44</td>
<td>X</td>
<td>88</td>
<td>58</td>
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<tr>
<td>E</td>
<td>69</td>
<td>45</td>
<td>Y</td>
<td>89</td>
<td>59</td>
</tr>
<tr>
<td>F</td>
<td>70</td>
<td>46</td>
<td>Z</td>
<td>90</td>
<td>5A</td>
</tr>
</tbody>
</table>
# List of abbreviations

**Note:**
The following list of abbreviations includes all abbreviations and their meanings used in the entire SINAMICS family of drives.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Source of abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A...</td>
<td>Alarm</td>
<td>Alarm</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
<td>Alternating current</td>
</tr>
<tr>
<td>ADC</td>
<td>Analog Digital Converter</td>
<td>Analog-digital converter</td>
</tr>
<tr>
<td>AI</td>
<td>Analog Input</td>
<td>Analog input</td>
</tr>
<tr>
<td>AIM</td>
<td>Active Interface Module</td>
<td>Active Interface Module</td>
</tr>
<tr>
<td>ALM</td>
<td>Active Line Module</td>
<td>Active Line Module</td>
</tr>
<tr>
<td>AO</td>
<td>Analog Output</td>
<td>Analog output</td>
</tr>
<tr>
<td>AOP</td>
<td>Advanced Operator Panel</td>
<td>Advanced Operator Panel</td>
</tr>
<tr>
<td>APC</td>
<td>Advanced Positioning Control</td>
<td>Advanced Positioning Control</td>
</tr>
<tr>
<td>AR</td>
<td>Automatic Restart</td>
<td>Automatic restart</td>
</tr>
<tr>
<td>ASC</td>
<td>Armature Short-Circuit</td>
<td>Armature short-circuit</td>
</tr>
<tr>
<td>ASCII</td>
<td>American Standard Code for Information Interchange</td>
<td>American Standard Code for Information Interchange</td>
</tr>
<tr>
<td>ASM</td>
<td>Asynchronmotor</td>
<td>Induction motor</td>
</tr>
<tr>
<td>BB</td>
<td>Betriebsbedingung</td>
<td>Operating condition</td>
</tr>
<tr>
<td>BERO</td>
<td>-</td>
<td>Contact-free proximity switch</td>
</tr>
<tr>
<td>BI</td>
<td>Binector Input</td>
<td>Binector input</td>
</tr>
<tr>
<td>BIA</td>
<td>Berufsgenossenschaftliches Institut für Arbe-Germany's Institute for Occupational Safety its sicherheit</td>
<td>German's Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>BICO</td>
<td>Binector Connector Technology</td>
<td>Binector connector technology</td>
</tr>
<tr>
<td>BLM</td>
<td>Basic Line Module</td>
<td>Basic Line Module</td>
</tr>
<tr>
<td>BO</td>
<td>Binector Output</td>
<td>Binector output</td>
</tr>
<tr>
<td>BOP</td>
<td>Basic Operator Panel</td>
<td>Basic Operator Panel</td>
</tr>
<tr>
<td>C</td>
<td>Capacitance</td>
<td>Capacitance</td>
</tr>
<tr>
<td>C...</td>
<td>-</td>
<td>Safety message</td>
</tr>
<tr>
<td>CAN</td>
<td>Controller Area Network</td>
<td>Serial bus system</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>CBC</td>
<td>Communication Board CAN</td>
<td>Communication Board CAN</td>
</tr>
<tr>
<td>CD</td>
<td>Compact Disk</td>
<td>Compact disk</td>
</tr>
<tr>
<td>CDS</td>
<td>Command Data Set</td>
<td>Command data set</td>
</tr>
<tr>
<td>CF Card</td>
<td>CompactFlash Card</td>
<td>CompactFlash memory card</td>
</tr>
<tr>
<td>CI</td>
<td>Connector Input</td>
<td>Connector input</td>
</tr>
<tr>
<td>CLC</td>
<td>Clearance Control</td>
<td>Clearance control</td>
</tr>
<tr>
<td>CNC</td>
<td>Computer Numerical Control</td>
<td>Computerized numerical control</td>
</tr>
<tr>
<td>CO</td>
<td>Connector Output</td>
<td>Connector output</td>
</tr>
<tr>
<td>CO/BO</td>
<td>Connector Output/Binector Output</td>
<td>Connector output/binector output</td>
</tr>
<tr>
<td>COB ID</td>
<td>CAN Object Identification</td>
<td>CAN object identification</td>
</tr>
<tr>
<td>COM</td>
<td>Common contact of a changeover relay</td>
<td>Center contact on a changeover contact</td>
</tr>
<tr>
<td>COMM</td>
<td>Commissioning</td>
<td>Commissioning</td>
</tr>
<tr>
<td>CP</td>
<td>Communications Processor</td>
<td>Communication processor</td>
</tr>
<tr>
<td>CPU</td>
<td>Central Processing Unit</td>
<td>Central processing unit</td>
</tr>
<tr>
<td>CRC</td>
<td>Cyclic Redundancy Check</td>
<td>Cyclic redundancy check</td>
</tr>
<tr>
<td>CSM</td>
<td>Control Supply Module</td>
<td>Control Supply Module</td>
</tr>
<tr>
<td>CU</td>
<td>Control Unit</td>
<td>Control Unit</td>
</tr>
<tr>
<td>CUA</td>
<td>Control Unit Adapter</td>
<td>Control Unit Adapter</td>
</tr>
<tr>
<td>CUD</td>
<td>Control Unit DC MASTER</td>
<td>Control Unit DC MASTER</td>
</tr>
<tr>
<td>DAC</td>
<td>Digital Analog Converter</td>
<td>D-A converter</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current</td>
<td>Direct current</td>
</tr>
<tr>
<td>DCB</td>
<td>Drive Control Block</td>
<td>Drive Control Block</td>
</tr>
<tr>
<td>DCBRK</td>
<td>DC Brake</td>
<td>DC braking</td>
</tr>
<tr>
<td>DCC</td>
<td>Drive Control Chart</td>
<td>Drive Control Chart</td>
</tr>
<tr>
<td>DCN</td>
<td>Direct Current Negative</td>
<td>Direct current negative</td>
</tr>
<tr>
<td>DCP</td>
<td>Direct Current Positive</td>
<td>Direct current positive</td>
</tr>
<tr>
<td>DDS</td>
<td>Drive Data Set</td>
<td>Drive data set</td>
</tr>
<tr>
<td>DI</td>
<td>Digital Input</td>
<td>Digital input</td>
</tr>
<tr>
<td>DI/DO</td>
<td>Digital Input/Digital Output</td>
<td>Digital input/digital output, bidirectional</td>
</tr>
<tr>
<td>DMC</td>
<td>DRIVE-CLiQ Hub Module Cabinet</td>
<td>DRIVE-CLiQ Hub Module Cabinet</td>
</tr>
<tr>
<td>DME</td>
<td>DRIVE-CLiQ Hub Module External</td>
<td>DRIVE-CLiQ Hub Module External</td>
</tr>
<tr>
<td>DO</td>
<td>Digital Output</td>
<td>Digital output</td>
</tr>
<tr>
<td>DO</td>
<td>Drive Object</td>
<td>Drive object</td>
</tr>
<tr>
<td>DP</td>
<td>Decentralized Peripherals</td>
<td>Distributed I/Os</td>
</tr>
<tr>
<td>DPRAM</td>
<td>Dual-Port Random Access Memory</td>
<td>Memory with dual access</td>
</tr>
<tr>
<td>DRAM</td>
<td>Dynamic Random Access Memory</td>
<td>Dynamic memory</td>
</tr>
<tr>
<td>DRIVE-CLiQ</td>
<td>DRIVE Component Link with IQ</td>
<td>DRIVE Component Link with IQ</td>
</tr>
<tr>
<td>DSC</td>
<td>Dynamic Servo Control</td>
<td>Dynamic Servo Control</td>
</tr>
<tr>
<td>DTC</td>
<td>Digital Time Clock</td>
<td>Time switch</td>
</tr>
</tbody>
</table>
## List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Source of abbreviation</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASC</td>
<td>External Armature Short-Circuit</td>
<td>External armature short-circuit</td>
</tr>
<tr>
<td>EDS</td>
<td>Encoder Data Set</td>
<td>Encoder data set</td>
</tr>
<tr>
<td>EGB</td>
<td>Elektrostatisch gefährdete Baugruppen</td>
<td>Electrostatic Sensitive Devices (ESD)</td>
</tr>
<tr>
<td>ELCB</td>
<td>Earth Leakage Circuit Breaker</td>
<td>Residual current operated circuit breaker</td>
</tr>
<tr>
<td>ELP</td>
<td>Earth Leakage Protection</td>
<td>Ground-fault monitoring</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic Compatibility</td>
<td>Electromagnetic compatibility</td>
</tr>
<tr>
<td>EMF</td>
<td>Electromagnetic Force</td>
<td>Electromagnetic force</td>
</tr>
<tr>
<td>EMK</td>
<td>Elektromagnetische Kraft</td>
<td>Electromagnetic force</td>
</tr>
<tr>
<td>EMV</td>
<td>Elektromagnetische Verträglichkeit</td>
<td>Electromagnetic compatibility (EMC)</td>
</tr>
<tr>
<td>EN</td>
<td>Europäische Norm</td>
<td>European standard</td>
</tr>
<tr>
<td>EnDat</td>
<td>Encoder Data Interface</td>
<td>Encoder interface</td>
</tr>
<tr>
<td>EP</td>
<td>Enable Pulses</td>
<td>Pulse enable</td>
</tr>
<tr>
<td>EPOS</td>
<td>Einfachpositionierer</td>
<td>Basic positioner</td>
</tr>
<tr>
<td>ES</td>
<td>Engineering System</td>
<td>Engineering system</td>
</tr>
<tr>
<td>ESB</td>
<td>Ersatzschaltbild</td>
<td>Equivalent circuit diagram</td>
</tr>
<tr>
<td>ESD</td>
<td>Electrostatic Sensitive Devices</td>
<td>Electrostatic sensitive devices</td>
</tr>
<tr>
<td>ESR</td>
<td>Extended Stop and Retract</td>
<td>Extended stop and retract</td>
</tr>
<tr>
<td>F...</td>
<td>Fault</td>
<td>Fault</td>
</tr>
<tr>
<td>FAQ</td>
<td>Frequently Asked Questions</td>
<td>Frequently asked questions</td>
</tr>
<tr>
<td>FBL</td>
<td>Free Blocks</td>
<td>Free function blocks</td>
</tr>
<tr>
<td>FCC</td>
<td>Function Control Chart</td>
<td>Function Control Chart</td>
</tr>
<tr>
<td>FCC</td>
<td>Flux Current Control</td>
<td>Flux current control</td>
</tr>
<tr>
<td>FD</td>
<td>Function Diagram</td>
<td>Function diagram</td>
</tr>
<tr>
<td>F-DI</td>
<td>Fail-safe Digital Input</td>
<td>Fail-safe digital input</td>
</tr>
<tr>
<td>F-DO</td>
<td>Fail-safe Digital Output</td>
<td>Fail-safe digital output</td>
</tr>
<tr>
<td>FEM</td>
<td>Fremderregter Synchronmotor</td>
<td>Separately excited synchronous motor</td>
</tr>
<tr>
<td>FEPROM</td>
<td>Flash EPROM</td>
<td>Non-volatile read/write memory</td>
</tr>
<tr>
<td>FG</td>
<td>Function Generator</td>
<td>Function generator</td>
</tr>
<tr>
<td>FI</td>
<td>-</td>
<td>Fault current</td>
</tr>
<tr>
<td>FOC</td>
<td>Fiber-Optic Cable</td>
<td>Fiber-optic cable</td>
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<tr>
<td>FP</td>
<td>Funktionsplan</td>
<td>Function diagram</td>
</tr>
<tr>
<td>FPGA</td>
<td>Field Programmable Gate Array</td>
<td>Field Programmable Gate Array</td>
</tr>
<tr>
<td>FW</td>
<td>Firmware</td>
<td>Firmware</td>
</tr>
<tr>
<td>GB</td>
<td>Gigabyte</td>
<td>Gigabyte</td>
</tr>
<tr>
<td>GC</td>
<td>Global Control</td>
<td>Global Control Telegram (broadcast telegram)</td>
</tr>
<tr>
<td>GND</td>
<td>Ground</td>
<td>Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as G)</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
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</tr>
<tr>
<td>GSD</td>
<td>Gerätestammdatei</td>
<td>Generic Station Description: Describes the characteristics of a PROFIBUS slave</td>
</tr>
<tr>
<td>GSV</td>
<td>Gate Supply Voltage</td>
<td>Gate supply voltage</td>
</tr>
<tr>
<td>GUID</td>
<td>Globally Unique Identifier</td>
<td>Globally unique identifier</td>
</tr>
<tr>
<td>H</td>
<td>High Frequency</td>
<td>High frequency</td>
</tr>
<tr>
<td>HFD</td>
<td>Hochfrequenzdrossel</td>
<td>High-frequency reactor</td>
</tr>
<tr>
<td>HLG</td>
<td>Hochlaufgeber</td>
<td>Ramp-function generator</td>
</tr>
<tr>
<td>HMI</td>
<td>Human Machine Interface</td>
<td>Human Machine Interface</td>
</tr>
<tr>
<td>HTL</td>
<td>High-Threshold Logic</td>
<td>Logic with a high fault threshold</td>
</tr>
<tr>
<td>HW</td>
<td>Hardware</td>
<td>Hardware</td>
</tr>
<tr>
<td>I</td>
<td>i. V. In Vorbereitung</td>
<td>Under development: This feature is not currently available</td>
</tr>
<tr>
<td>I/O</td>
<td>Input/Output</td>
<td>Input/output</td>
</tr>
<tr>
<td>I2C</td>
<td>Inter-Integrated Circuit</td>
<td>Internal serial data bus</td>
</tr>
<tr>
<td>IASC</td>
<td>Internal Armature Short-Circuit</td>
<td>Internal armature short-circuit</td>
</tr>
<tr>
<td>IBN</td>
<td>Inbetriebnahme</td>
<td>Commissioning</td>
</tr>
<tr>
<td>ID</td>
<td>Identifier</td>
<td>Identification</td>
</tr>
<tr>
<td>IE</td>
<td>Industrial Ethernet</td>
<td>Industrial Ethernet</td>
</tr>
<tr>
<td>IEC</td>
<td>International Electrotechnical Commission</td>
<td>International Electrotechnical Commission</td>
</tr>
<tr>
<td>IF</td>
<td>Interface</td>
<td>Interface</td>
</tr>
<tr>
<td>IGBT</td>
<td>Insulated Gate Bipolar Transistor</td>
<td>Insulated gate bipolar transistor</td>
</tr>
<tr>
<td>IGCT</td>
<td>Integrated Gate-Controlled Thyristor</td>
<td>Semiconductor circuit breaker with integrated control electrode</td>
</tr>
<tr>
<td>IL</td>
<td>Impulslöschung</td>
<td>Pulse suppression</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
<td>Internet Protocol</td>
</tr>
<tr>
<td>IPO</td>
<td>Interpolator</td>
<td>Interpolator</td>
</tr>
<tr>
<td>IT</td>
<td>Isolé Terré</td>
<td>Non-grounded three-phase power supply</td>
</tr>
<tr>
<td>IVP</td>
<td>Internal Voltage Protection</td>
<td>Internal voltage protection</td>
</tr>
<tr>
<td>J</td>
<td>JoG Jogging</td>
<td>Jogging</td>
</tr>
<tr>
<td>K</td>
<td>KDV Kreuzweiser Datenvergleich</td>
<td>Crosswise data comparison</td>
</tr>
<tr>
<td></td>
<td>KHP Know-how protection</td>
<td>Know-how protection</td>
</tr>
<tr>
<td></td>
<td>KIP Kinetische Pufferung</td>
<td>Kinetic buffering</td>
</tr>
<tr>
<td>Kp</td>
<td>- Proportional gain</td>
<td>Proportional gain</td>
</tr>
<tr>
<td>KTY</td>
<td>- Special temperature sensor</td>
<td>Special temperature sensor</td>
</tr>
<tr>
<td>L</td>
<td>- Formula symbol for inductance</td>
<td>Formula symbol for inductance</td>
</tr>
<tr>
<td>LED</td>
<td>Light Emitting Diode</td>
<td>Light emitting diode</td>
</tr>
<tr>
<td>LIN</td>
<td>Linearmotor</td>
<td>Linear motor</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>LR</td>
<td>Lageregler</td>
<td>Position controller</td>
</tr>
<tr>
<td>LSB</td>
<td>Least Significant Bit</td>
<td>Least significant bit</td>
</tr>
<tr>
<td>LSC</td>
<td>Line-Side Converter</td>
<td>Line-side converter</td>
</tr>
<tr>
<td>LSS</td>
<td>Line-Side Switch</td>
<td>Line-side switch</td>
</tr>
<tr>
<td>LU</td>
<td>Length Unit</td>
<td>Length unit</td>
</tr>
<tr>
<td>LWL</td>
<td>Lichtwellenleiter</td>
<td>Fiber-optic cable</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>Formula symbol for torque</td>
</tr>
<tr>
<td>M</td>
<td>Masse</td>
<td>Reference potential for all signal and operating voltages, usually defined as 0 V (also referred to as GND)</td>
</tr>
<tr>
<td>MB</td>
<td>Megabyte</td>
<td>Megabyte</td>
</tr>
<tr>
<td>MCC</td>
<td>Motion Control Chart</td>
<td>Motion Control Chart</td>
</tr>
<tr>
<td>MDI</td>
<td>Manual Data Input</td>
<td>Manual data input</td>
</tr>
<tr>
<td>MDS</td>
<td>Motor Data Set</td>
<td>Motor data set</td>
</tr>
<tr>
<td>MLFB</td>
<td>Maschinenlesbare Fabrikatebezeichnung</td>
<td>Machine-readable product code</td>
</tr>
<tr>
<td>MMC</td>
<td>Man-Machine Communication</td>
<td>Man-machine communication</td>
</tr>
<tr>
<td>MLC</td>
<td>Micro Memory Card</td>
<td>Micro memory card</td>
</tr>
<tr>
<td>MSB</td>
<td>Most Significant Bit</td>
<td>Most significant bit</td>
</tr>
<tr>
<td>MSC</td>
<td>Motor-Side Converter</td>
<td>Motor-side converter</td>
</tr>
<tr>
<td>MSCY_C1</td>
<td>Master Slave Cycle Class 1</td>
<td>Cyclic communication between master (Class 1) and slave</td>
</tr>
<tr>
<td>MSR</td>
<td>Motorstromrichter</td>
<td>Motor-side converter</td>
</tr>
<tr>
<td>MT</td>
<td>Messtaster</td>
<td>Probe</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td>Not connected</td>
</tr>
<tr>
<td>N...</td>
<td></td>
<td>No message or internal message</td>
</tr>
<tr>
<td>NAMUR</td>
<td>Normenarbeitsgemeinschaft für Mess- und Regeltechnik in der chemischen Industrie</td>
<td>Standardization association for measurement and control in chemical industries</td>
</tr>
<tr>
<td>NC</td>
<td>Normally Closed (contact)</td>
<td>NC contact</td>
</tr>
<tr>
<td>NC</td>
<td>Numerical Control</td>
<td>Numerical control</td>
</tr>
<tr>
<td>NEMA</td>
<td>National Electrical Manufacturers Association</td>
<td>Standardization body in the USA (United States of America)</td>
</tr>
<tr>
<td>NM</td>
<td>Nullmarke</td>
<td>Zero mark</td>
</tr>
<tr>
<td>NO</td>
<td>Normally Open (contact)</td>
<td>NO contact</td>
</tr>
<tr>
<td>NSR</td>
<td>Netzstromrichter</td>
<td>Line-side converter</td>
</tr>
<tr>
<td>NVRAM</td>
<td>Non-Volatile Random Access Memory</td>
<td>Non-volatile read/write memory</td>
</tr>
<tr>
<td>OA</td>
<td>Open Architecture</td>
<td>Open Architecture</td>
</tr>
<tr>
<td>OC</td>
<td>Operating Condition</td>
<td>Operating condition</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
<td>Original equipment manufacturer</td>
</tr>
<tr>
<td>OLP</td>
<td>Optical Link Plug</td>
<td>Fiber-optic bus connector</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>--------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>OMI</td>
<td>Option Module Interface</td>
<td>Option module interface</td>
</tr>
<tr>
<td>P</td>
<td>-</td>
<td>Adjustable parameter</td>
</tr>
<tr>
<td>p...</td>
<td>Processor 1</td>
<td>Processor 1</td>
</tr>
<tr>
<td>P1</td>
<td>Processor 2</td>
<td>Processor 2</td>
</tr>
<tr>
<td>PB</td>
<td>PROFIBUS</td>
<td>PROFIBUS</td>
</tr>
<tr>
<td>PcCtrl</td>
<td>PC Control</td>
<td>Control for master</td>
</tr>
<tr>
<td>PD</td>
<td>PROFIdrive</td>
<td>PROFIdrive</td>
</tr>
<tr>
<td>PDS</td>
<td>Power Unit Data Set</td>
<td>Power unit data set</td>
</tr>
<tr>
<td>PE</td>
<td>Protective Earth</td>
<td>Protective earth (ground)</td>
</tr>
<tr>
<td>PELV</td>
<td>Protective Extra Low Voltage</td>
<td>Protective extra low voltage</td>
</tr>
<tr>
<td>PEM</td>
<td>Permanent Magnet Synchronmotor</td>
<td>Permanent-magnet synchronous motor</td>
</tr>
<tr>
<td>PG</td>
<td>Programmiergerät</td>
<td>Programming device</td>
</tr>
<tr>
<td>PI</td>
<td>Proportional Integral</td>
<td>Proportional integral</td>
</tr>
<tr>
<td>PID</td>
<td>Proportional Integral Differential</td>
<td>Proportional integral differential</td>
</tr>
<tr>
<td>PLC</td>
<td>Programmable Logic Controller</td>
<td>Programmable logic controller</td>
</tr>
<tr>
<td>PLL</td>
<td>Phase-Locked Loop</td>
<td>Phase-locked loop</td>
</tr>
<tr>
<td>PN</td>
<td>PROFINET</td>
<td>PROFINET</td>
</tr>
<tr>
<td>PNO</td>
<td>PROFIBUS Nutzerorganisation</td>
<td>PROFIBUS user organization</td>
</tr>
<tr>
<td>PPI</td>
<td>Point-to-Point Interface</td>
<td>Point-to-point interface</td>
</tr>
<tr>
<td>PRBS</td>
<td>Pseudo Random Binary Signal</td>
<td>White noise</td>
</tr>
<tr>
<td>PROFIBUS</td>
<td>Process Field Bus</td>
<td>Serial data bus</td>
</tr>
<tr>
<td>PS</td>
<td>Power Supply</td>
<td>Power supply</td>
</tr>
<tr>
<td>PSA</td>
<td>Power Stack Adapter</td>
<td>Power Stack Adapter</td>
</tr>
<tr>
<td>PTC</td>
<td>Positive Temperature Coefficient</td>
<td>Positive temperature coefficient</td>
</tr>
<tr>
<td>PTP</td>
<td>Point-To-Point</td>
<td>Point-to-point</td>
</tr>
<tr>
<td>PWM</td>
<td>Pulse Width Modulation</td>
<td>Pulse width modulation</td>
</tr>
<tr>
<td>PZD</td>
<td>Prozessdaten</td>
<td>Process data</td>
</tr>
<tr>
<td>R</td>
<td>Display parameter (read-only)</td>
<td>Display parameter (read-only)</td>
</tr>
<tr>
<td>RAM</td>
<td>Random Access Memory</td>
<td>Read/write memory</td>
</tr>
<tr>
<td>RCCB</td>
<td>Residual Current Circuit Breaker</td>
<td>Residual current operated circuit breaker</td>
</tr>
<tr>
<td>RCD</td>
<td>Residual Current Device</td>
<td>Residual current operated circuit breaker</td>
</tr>
<tr>
<td>RCM</td>
<td>Residual Current Monitor</td>
<td>Residual current monitor</td>
</tr>
<tr>
<td>RFG</td>
<td>Ramp-Function Generator</td>
<td>Ramp-function generator</td>
</tr>
<tr>
<td>RJ45</td>
<td>Registered Jack 45</td>
<td>Term for an 8-pin socket system for data transmission with shielded or non-shielded multi-wire copper cables</td>
</tr>
<tr>
<td>RKA</td>
<td>Rückkühlanlage</td>
<td>Cooling unit</td>
</tr>
<tr>
<td>RO</td>
<td>Read Only</td>
<td>Read only</td>
</tr>
<tr>
<td>RPDO</td>
<td>Receive Process Data Object</td>
<td>Receive process data object</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>RS232</td>
<td>Recommended Standard 232</td>
<td>Interface standard for cable-connected serial data transmission between a sender and receiver (also known as EIA232)</td>
</tr>
<tr>
<td>RS485</td>
<td>Recommended Standard 485</td>
<td>Interface standard for a cable-connected differential, parallel, and/or serial bus system (data transmission between a number of senders and receivers, also known as EIA485)</td>
</tr>
<tr>
<td>RTC</td>
<td>Real Time Clock</td>
<td>Real-time clock</td>
</tr>
<tr>
<td>RZA</td>
<td>Raumziegerapproximation</td>
<td>Space vector approximation</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S1</td>
<td>-</td>
<td>Continuous operation</td>
</tr>
<tr>
<td>S3</td>
<td>-</td>
<td>Intermittent operation</td>
</tr>
<tr>
<td>SAM</td>
<td>Safe Acceleration Monitor</td>
<td>Safe acceleration monitoring</td>
</tr>
<tr>
<td>SBC</td>
<td>Safe Brake Control</td>
<td>Safe brake control</td>
</tr>
<tr>
<td>SBH</td>
<td>Sicher Betriebshalt</td>
<td>Safe operating stop</td>
</tr>
<tr>
<td>SBR</td>
<td>Safe Brake Ramp</td>
<td>Safe brake ramp monitoring</td>
</tr>
<tr>
<td>SCA</td>
<td>Safe Cam</td>
<td>Safe cam</td>
</tr>
<tr>
<td>SD Card</td>
<td>Secure Digital Card</td>
<td>Secure digital memory card</td>
</tr>
<tr>
<td>SDI</td>
<td>Safe Direction</td>
<td>Safe motion direction</td>
</tr>
<tr>
<td>SE</td>
<td>Sicherer Software-Endschalter</td>
<td>Safe software limit switch</td>
</tr>
<tr>
<td>SG</td>
<td>Sicher reduzierte Geschwindigkeit</td>
<td>Safely reduced speed</td>
</tr>
<tr>
<td>SGA</td>
<td>Sicherheitsgerichteter Ausgang</td>
<td>Safety-related output</td>
</tr>
<tr>
<td>SGE</td>
<td>Sicherheitsgerichteter Eingang</td>
<td>Safety-related input</td>
</tr>
<tr>
<td>SH</td>
<td>Sicherer Halt</td>
<td>Safe standstill</td>
</tr>
<tr>
<td>SI</td>
<td>Safety Integrated</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>SIL</td>
<td>Safety Integrity Level</td>
<td>Safety Integrity Level</td>
</tr>
<tr>
<td>SLM</td>
<td>Smart Line Module</td>
<td>Smart Line Module</td>
</tr>
<tr>
<td>SLP</td>
<td>Safely-Limited Position</td>
<td>Safely-limited position</td>
</tr>
<tr>
<td>SLS</td>
<td>Safely-Limited Speed</td>
<td>Safely-limited speed</td>
</tr>
<tr>
<td>SLVC</td>
<td>Sensorless Vector Control</td>
<td>Vector control without encoder (sensorless)</td>
</tr>
<tr>
<td>SM</td>
<td>Sensor Module</td>
<td>Sensor Module</td>
</tr>
<tr>
<td>SMC</td>
<td>Sensor Module Cabinet</td>
<td>Sensor Module Cabinet</td>
</tr>
<tr>
<td>SME</td>
<td>Sensor Module External</td>
<td>Sensor Module External</td>
</tr>
<tr>
<td>SMI</td>
<td>SINAMICS Sensor Module Integrated</td>
<td>SINAMICS Sensor Module Integrated</td>
</tr>
<tr>
<td>SN</td>
<td>Sicherer Software-Nocken</td>
<td>Safe software cam</td>
</tr>
<tr>
<td>SOS</td>
<td>Safe Operating Stop</td>
<td>Safe operating stop</td>
</tr>
<tr>
<td>SP</td>
<td>Service Pack</td>
<td>Service pack</td>
</tr>
<tr>
<td>SPC</td>
<td>Setpoint Channel</td>
<td>Setpoint channel</td>
</tr>
<tr>
<td>SPI</td>
<td>Serial Peripheral Interface</td>
<td>Serial interface for connecting peripherals</td>
</tr>
<tr>
<td>SPS</td>
<td>Speicherprogrammierbare Steuerung</td>
<td>Programmable logic controller</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>SS1</td>
<td>Safe Stop 1</td>
<td>Safe stop 1 (monitored for time and ramping up)</td>
</tr>
<tr>
<td>SS2</td>
<td>Safe Stop 2</td>
<td>Safe stop 2</td>
</tr>
<tr>
<td>SSI</td>
<td>Synchronous Serial Interface</td>
<td>Synchronous serial interface</td>
</tr>
<tr>
<td>SSM</td>
<td>Safe Speed Monitor</td>
<td>Safe feedback from speed monitor</td>
</tr>
<tr>
<td>SSP</td>
<td>SINAMICS Support Package</td>
<td>SINAMICS support package</td>
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http://www.siemens.de/safety

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