<table>
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</thead>
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<td></td>
</tr>
</tbody>
</table>

Valid for

<table>
<thead>
<tr>
<th>Drive</th>
<th>Firmware version</th>
</tr>
</thead>
<tbody>
<tr>
<td>SINAMICS DCM</td>
<td>1.4 SP1 (based on 4.7)</td>
</tr>
</tbody>
</table>
Warning notice system

This manual contains information which you must observe to ensure your own personal safety as well as to avoid material damage. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to equipment damage have no safety alert symbol. Depending on the hazard level, warnings are indicated in a descending order as follows:

⚠️ DANGER
- indicates that death or serious injury will result if proper precautions are not taken.

⚠️ WARNING
- indicates that death or serious injury could result if proper precautions are not taken.

⚠️ CAUTION
- indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
- indicates that property damage can result if proper precautions are not taken.

If more than one level of danger is simultaneously applicable, the warning notice for the highest level is used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified personnel

The product/system described in this documentation may only be operated by personnel qualified for the specific task in accordance with the relevant documentation for the specific task, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠️ WARNING
- Siemens products are only permitted to be used for the applications listed in the catalog and in the associated technical documentation. If third-party products and components are used, then they must be recommended or approved by Siemens. These products can only function correctly and safely if they are transported, stored, set up, mounted, installed, commissioned, operated and maintained correctly. The permissible ambient conditions must be adhered to. Notes in the relevant documentation must be observed.

Trademarks

All names identified with ® are registered trademarks of Siemens AG. Any other names used in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of liability

We have checked the contents of this publication for consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. The information given in this document is reviewed at regular intervals and any corrections that might be necessary are made in the subsequent editions.
Preface

Information about the SINAMICS documentation

The SINAMICS documentation is structured according to the following categories:

- General documentation/catalogs
- Manufacturer/service documentation

This documentation is part of the Technical Customer Documentation developed for SINAMICS.

In the interests of clarity, this documentation does not contain all the detailed information for all product types and cannot take into account every possible aspect of installation, operation or maintenance.

The contents of this documentation are not part of an earlier or existing agreement, a promise or a legal agreement, nor do they change this. All obligations on the part of Siemens can be found in the respective sales contract, which also contains the complete and sole warranty provisions. These contractual warranty provisions are neither extended nor restricted as a result of the statements made in this documentation.

Target group

This documentation addresses commissioning engineers and service personnel who use SINAMICS.

Objective

This manual contains information about all parameters, function diagrams, 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.

Search tools

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

1. Table of contents
   - Table of contents for the complete manual (Page 7)
   - Table of contents for function diagrams (Page 662)
2. List of abbreviations (Page 1183)
3. Index (Page 1193)
Technical Support

Country-specific telephone numbers for technical support are provided on the Internet at:
http://www.siemens.com/automation/service&support

SINAMICS

You can find information on SINAMICS at:
http://www.siemens.com/sinamics
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<td>Data sets</td>
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<td>3.19</td>
<td>Communication between devices</td>
<td>829</td>
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<td>3.20</td>
<td>Terminal Module 15 for SINAMICS (TM15DI/DO)</td>
<td>835</td>
</tr>
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<td>3.21</td>
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<td>839</td>
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<td>3.22</td>
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<td>3.23</td>
<td>Basic Operator Panel 20 (BOP20)</td>
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<td>Overview of faults and alarms</td>
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<td>4.1.1</td>
<td>General information on faults and alarms</td>
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<td>Explanation of the list of faults and alarms</td>
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<td>4.1.3</td>
<td>Number ranges of faults and alarms</td>
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<td>ASCII table (characters that can be displayed)</td>
<td>1180</td>
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<td>A.2</td>
<td>List of abbreviations</td>
<td>1183</td>
</tr>
<tr>
<td>Index</td>
<td></td>
<td>1193</td>
</tr>
</tbody>
</table>
## Fundamental safety instructions

### Content

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
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</tr>
<tr>
<td>1.2</td>
<td>Industrial security</td>
<td>11</td>
</tr>
</tbody>
</table>
1 Fundamental safety instructions

1.1 General safety instructions

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Risk of death if the safety instructions and remaining risks are not carefully observed</strong></td>
</tr>
<tr>
<td>If the safety instructions and residual risks are not carefully observed in the associated hardware documentation, accidents involving severe injuries or death can occur.</td>
</tr>
<tr>
<td>• Observe the safety instructions given in the hardware documentation.</td>
</tr>
<tr>
<td>• When assessing the risk, take into account residual risks.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WARNING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Danger to life or malfunctions of the machine as a result of incorrect or changed parameter assignment</strong></td>
</tr>
<tr>
<td>Machines can malfunction as a result of incorrect or changed parameter assignment, which in turn can lead to injuries or death.</td>
</tr>
<tr>
<td>• Protect the parameterization (parameter assignments) against unauthorized access.</td>
</tr>
<tr>
<td>• Respond to possible malfunctions by applying suitable measures (e.g. EMERGENCY-STOP or EMERGENCY-OFF).</td>
</tr>
</tbody>
</table>
1.2 Industrial security

Note

Industrial security

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, devices, and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

To ensure that Siemens products and solutions are operated securely, suitable preventive measures (e.g. cell protection concept) and each component must be integrated into a state-of-the-art holistic industrial security concept. Any third-party products that may be in use must also be taken into account. You will find more information about industrial security at:

http://www.siemens.com/industrialsecurity

To receive information about product updates on a regular basis, register for our product newsletter. You will find more information at:

http://support.automation.siemens.com

WARNING

Danger due to unsafe operating states caused by software manipulation

Software manipulation (e.g. by viruses, Trojan horses, malware, worms) can cause unsafe operating states to develop in your installation which can result in death, severe injuries and/or material damage.

• Update your software regularly.
  
  You can find information and newsletters on this subject at:
  
  http://support.automation.siemens.com

• Integrate the automation and drive components into a holistic, state-of-the-art industrial security concept for the plant or machine.
  
  For more information, visit:
  
  http://www.siemens.com/industrialsecurity

• Make sure that you include all installed products into the holistic industrial security concept.
1 Fundamental safety instructions

1.2 Industrial security
Parameters

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2.2 List of parameters 28
2.3 Parameters for data sets 646
2.4 Parameters for write protection and know-how protection 656
2 Parameters

2.1 Overview of parameters

2.1.1 Explanation of the list of parameters

Basic structure of the parameter descriptions

The data in the following example have been chosen at random. The description of a parameter includes as a maximum, the information listed below. Some of the information is optional.

The "List of parameters" (Page 28) has the following structure:

----------------------------------- Start of example -----------------------------------

<table>
<thead>
<tr>
<th>pxxxx[0...n]</th>
<th>BICO: Full parameter name / abbreviated name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive object (function module)</td>
<td>Can be changed: C1(x), C2(x), U, T</td>
</tr>
<tr>
<td>Drive object (function module)</td>
<td>Data type: Unsigned32 / Integer16</td>
</tr>
<tr>
<td>Drive object (function module)</td>
<td>P-Group: Closed-loop control</td>
</tr>
<tr>
<td>Drive object (function module)</td>
<td>Not for motor type: ASM</td>
</tr>
</tbody>
</table>

Min
0.00 [Nm]

Max
10.00 [Nm]

Factory setting
0.00 [Nm]

Description: Text

Value:
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:
[0] = Name and meaning of index 0
[1] = Name and meaning of index 1
[2] = Name and meaning of index 2
etc.

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>Name and meaning of bit 0</td>
<td>Yes</td>
<td>no</td>
<td>8060</td>
</tr>
<tr>
<td>01</td>
<td>Name and meaning of bit 1</td>
<td>Yes</td>
<td>no</td>
<td>8065</td>
</tr>
<tr>
<td>02</td>
<td>Name and meaning of bit 2</td>
<td>Yes</td>
<td>no</td>
<td>8065</td>
</tr>
</tbody>
</table>

Dependency: Text

Refer to: pxxxx, rxxxx
Refer to: Fxxxxx, Axxxxx

Danger:

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

Notice:

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

Note:

Information that might be useful.

----------------------------------- End of example -----------------------------------

The individual pieces of information are described in detail below.
Parameters

Parameter number

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

Examples of the representation in the parameter list:

- p... Adjustable parameters (read and write parameters)
- r... Display parameters (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
- r2129.0...15 Display parameter 2129 with bit field from bit 0 (smallest bit) to bit 15 (largest bit)

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

The following applies to adjustable parameters:

The parameter value "when shipped" is specified under "Factory setting" with the relevant unit in square parentheses. 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 and parameters:

- Executing macros
  p0015, p0700, p1000, p1500
- Setting a PROFIBUS telegram (BICO interconnection)
  p0922
- Setting component lists
  p0400
- Automatically calculating and preassigning
  p0112, p0340, p3900
- Restoring 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 parentheses.
2 Parameters
2.1 Overview of parameters

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

**BICO: Full parameter name / abbreviated 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.

**Example:**

- **r61000:** PROFINET Name of Station
  **CU_DC (PROFINET)**
  The parameter is only available in the case of the CU_DC drive object with the "PROFINET" function module.

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:
### 2 Parameters

#### 2.1 Overview of parameters

<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>This parameter is used by all drive objects.</td>
</tr>
<tr>
<td>CU_DC</td>
<td>6</td>
<td>Advanced Control Unit SINAMICS DCM (CUD) is to the left.</td>
</tr>
<tr>
<td>CU_DC_R</td>
<td>6</td>
<td>Advanced Control Unit SINAMICS DCM (CUD) is to the right.</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>6</td>
<td>Standard Control Unit SINAMICS DCM (CUD) is to the left.</td>
</tr>
<tr>
<td>CU_DC_R_S</td>
<td>6</td>
<td>Standard Control Unit SINAMICS DCM (CUD) is to the right.</td>
</tr>
<tr>
<td>CU_DC (PROFINET)</td>
<td>-</td>
<td>Control Unit SINAMICS DCM with &quot;PROFINET&quot; function module</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>17</td>
<td>DC closed-loop control general or DC closed-loop control on the Advanced CUD left.</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>17</td>
<td>DC closed-loop control extended on the Advanced CUD right.</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>17</td>
<td>DC closed-loop control on the standard CUD right.</td>
</tr>
<tr>
<td>DC_CTRL_R_S</td>
<td>17</td>
<td>DC closed-loop control extended on the standard CUD right.</td>
</tr>
<tr>
<td>DC_CTRL (PROFINET)</td>
<td>-</td>
<td>DC closed-loop control with &quot;PROFINET&quot; function module.</td>
</tr>
<tr>
<td>TM31 (PROFINET)</td>
<td>200</td>
<td>Terminal Module 31.</td>
</tr>
<tr>
<td>TM31</td>
<td>200</td>
<td>Terminal Module 31 with &quot;PROFINET&quot; function module.</td>
</tr>
<tr>
<td>TM15DI_DO (PROFINET)</td>
<td>204</td>
<td>Terminal Module 15 (for SINAMICS).</td>
</tr>
<tr>
<td>TM15DI_DO (PROFINET)</td>
<td>208</td>
<td>Terminal Module 15 (for SINAMICS) with &quot;PROFINET&quot; function module.</td>
</tr>
<tr>
<td>TM150 (PROFINET)</td>
<td>208</td>
<td>Terminal Module 150.</td>
</tr>
<tr>
<td>TM150 (PROFINET)</td>
<td>208</td>
<td>Terminal Module 150 with &quot;PROFINET&quot; function module.</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]).
2 Parameters

2.1 Overview of parameters

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 unit state and that the change will not take effect until the unit switches to another state. This can be a single state or multiple states.

The following states are available:

- **C1(x)** Device commissioning
  
  **C1: Commissioning 1**
  
  Device is being commissioned (p0009 > 0).
  
  Pulses cannot be enabled.
  
  The parameter can only be changed for the following device commissioning settings (p0009 > 0):
  
  - C1: Can be changed for all settings p0009 > 0.
  - C1(x): Can be changed only when p0009 = x.

  A modified parameter value does not take effect until the 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 in the following drive commissioning settings (p0010 > 0):
  
  - C2: Can be changed for all settings p0010 > 0.
  - C2(x): Can only be changed for the settings 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
  
  **T: Ready to run**
  
  The pulses are not enabled and the state "C1(x)" or "C2(x)" is not active.

Note

Parameter p0009 is CU-specific (belongs to the Control Unit).

Parameter p0010 is drive-specific (belongs to 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**
  - \( p0340 = 1 \)
- **CALC.MOD.CON**
  - \( p0340 = 1 \)
- **CALC.MOD.EQU**
  - \( p0340 = 1 \)
- **CALC.MOD.LIM.REF**
  - \( p0340 = 1, 5 \)
- **CALC.MOD.REG**
  - \( p0340 = 1, 3 \)

**Note:**

For \( p3900 > 0 \), \( p0340 = 1 \) is also called automatically.

### Access level

Specifies the minimum 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 (belongs to the Control Unit).

A higher access level will also include the functions of the lower levels.
2 Parameters

2.1 Overview of parameters

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:

- Integer8  I8  8-bit integer number
- Integer16 I16  16-bit integer number
- Integer32 I32  32-bit integer number
- Unsigned8 U8  8 bits without sign
- Unsigned16 U16  16 bits without sign
- Unsigned32 U32  32 bits without sign
- FloatingPoint32 Float  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 creating BICO interconnections:

Table 2-2  Possible combinations of BICO interconnections

<table>
<thead>
<tr>
<th>BICO output parameter</th>
<th>CI parameter</th>
<th>BI parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unsigned32 / Integer16</td>
<td>Unsigned32 / 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>
<tr>
<td>BO: Integer16</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>BO: Unsigned32</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>BO: Integer32</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>BO: FloatingPoint32</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Legend:
- x : BICO interconnection permitted
- – : BICO interconnection not permitted
- rxxxxx: BICO interconnection is only permitted for the specified CO parameters
2 Parameters

2.1 Overview of parameters

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)

Note:
Information on the data sets can be taken from the following references:
References: SINAMICS DC MASTER operating instructions
            “Data sets” Chapter

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.

P-Group (refers only to access via BOP (Basic Operator Panel))
Specifies the functional group to which this parameter belongs. The required parameter group
can be set via p0004.

Note:
Parameter p0004 is CU-specific (belongs to the Control Unit).

Unit, unit group and unit selection
The standard unit of a parameter is specified in square parentheses after the values for “Min”,
“Max”, and “Factory setting”.

Note:
The units cannot be switched over for SINAMICS DCM.
The information under Unit Group and Unit Selection has no relevance.
2 Parameters

2.1 Overview of parameters

Parameter values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min.</td>
<td>Minimum value of the parameter [unit]</td>
</tr>
<tr>
<td>Max</td>
<td>Maximum value of the parameter [unit]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Value when delivered [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].

Not for motor type

This information is of no relevance for SINAMICS DC MASTER.

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 %

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 are responsible for using parameters that are marked "Expert list: 0" (parameter not included 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, "Technical Support" (hotline) does not provide any support for these parameters.
Description

Explanation of a parameter function.

Value

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) of 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 field

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

- **Bit number and signal name**
- **Meaning for 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 parameters to be additionally considered.
2 Parameters

2.1 Overview of parameters

Safety instructions

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 "Legal information" (Page 4).

Warning

⚠️ The description of this safety notice can be found at the beginning of this manual, see "Legal information" (Page 4).

Caution

⚠️ The description of this safety notice can be found at the beginning of this manual, see "Legal information" (Page 4).

Notice

The description of this safety notice can be found at the beginning of this manual, see "Legal information" (Page 4).

Note

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

Number ranges for SINAMICS in general

Note:
The following number ranges represent an overview of all parameters available for the SINAMICS drive family.
The parameters for the product described in this List Manual are described in detail in "List of parameters" (Page 28).

Parameters are grouped into the following number ranges:

Table 2-3 Number ranges for SINAMICS

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

### 2.1 Overview of parameters

<table>
<thead>
<tr>
<th>Range</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>To</td>
</tr>
<tr>
<td>2500</td>
<td>2699</td>
</tr>
<tr>
<td>2700</td>
<td>2719</td>
</tr>
<tr>
<td>2720</td>
<td>2729</td>
</tr>
<tr>
<td>2800</td>
<td>2819</td>
</tr>
<tr>
<td>2900</td>
<td>2930</td>
</tr>
<tr>
<td>3000</td>
<td>3099</td>
</tr>
<tr>
<td>3100</td>
<td>3109</td>
</tr>
<tr>
<td>3110</td>
<td>3199</td>
</tr>
<tr>
<td>3200</td>
<td>3299</td>
</tr>
<tr>
<td>3400</td>
<td>3659</td>
</tr>
<tr>
<td>3660</td>
<td>3699</td>
</tr>
<tr>
<td>3700</td>
<td>3779</td>
</tr>
<tr>
<td>3780</td>
<td>3819</td>
</tr>
<tr>
<td>3820</td>
<td>3849</td>
</tr>
<tr>
<td>3850</td>
<td>3899</td>
</tr>
<tr>
<td>3900</td>
<td>3999</td>
</tr>
<tr>
<td>4000</td>
<td>4599</td>
</tr>
<tr>
<td>4600</td>
<td>4699</td>
</tr>
<tr>
<td>4700</td>
<td>4799</td>
</tr>
<tr>
<td>4800</td>
<td>4849</td>
</tr>
<tr>
<td>4950</td>
<td>4999</td>
</tr>
<tr>
<td>5000</td>
<td>5169</td>
</tr>
<tr>
<td>5200</td>
<td>5230</td>
</tr>
<tr>
<td>5400</td>
<td>5499</td>
</tr>
<tr>
<td>5500</td>
<td>5599</td>
</tr>
<tr>
<td>5600</td>
<td>5614</td>
</tr>
<tr>
<td>5900</td>
<td>6999</td>
</tr>
<tr>
<td>7000</td>
<td>7499</td>
</tr>
<tr>
<td>7500</td>
<td>7599</td>
</tr>
<tr>
<td>7700</td>
<td>7729</td>
</tr>
<tr>
<td>7770</td>
<td>7789</td>
</tr>
<tr>
<td>7800</td>
<td>7839</td>
</tr>
<tr>
<td>7840</td>
<td>8399</td>
</tr>
<tr>
<td>8400</td>
<td>8449</td>
</tr>
<tr>
<td>8500</td>
<td>8599</td>
</tr>
</tbody>
</table>
## Table 2-3 Number ranges for SINAMICS, continued

<table>
<thead>
<tr>
<th>Range From</th>
<th>Range To</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8600</td>
<td>8799</td>
<td>CAN bus</td>
</tr>
<tr>
<td>8800</td>
<td>8899</td>
<td>Communication Board Ethernet (CBE), PROFIdrive</td>
</tr>
<tr>
<td>8900</td>
<td>8999</td>
<td>Industrial Ethernet, PROFINET, CBE20</td>
</tr>
<tr>
<td>9000</td>
<td>9299</td>
<td>topology</td>
</tr>
<tr>
<td>9300</td>
<td>9399</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>9400</td>
<td>9499</td>
<td>Parameter consistency and storage</td>
</tr>
<tr>
<td>9500</td>
<td>9899</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>9900</td>
<td>9949</td>
<td>topology</td>
</tr>
<tr>
<td>9950</td>
<td>9999</td>
<td>Diagnostics, internal</td>
</tr>
<tr>
<td>10000</td>
<td>10199</td>
<td>Safety Integrated</td>
</tr>
<tr>
<td>11000</td>
<td>11299</td>
<td>Free technology controller 0, 1, 2</td>
</tr>
<tr>
<td>20000</td>
<td>20999</td>
<td>Free function blocks (FBLOCKS)</td>
</tr>
<tr>
<td>21000</td>
<td>25999</td>
<td>Drive Control Chart (DCC)</td>
</tr>
<tr>
<td>50000</td>
<td>53999</td>
<td>SINAMICS DC MASTER (closed-loop DC current control)</td>
</tr>
<tr>
<td>61000</td>
<td>61001</td>
<td>PROFINET</td>
</tr>
</tbody>
</table>
2.2 List of parameters

Objects: CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Objects: DC_CTRL

### r0002 Control Unit operating display / CU_op_display

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC</td>
<td>0: Operation</td>
<td>Operating display for the Control Unit (CU).</td>
</tr>
<tr>
<td></td>
<td>10: Ready</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20: Wait for run-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25: Wait for automatic FW update of DRIVE-CLiQ components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31: Commissioning software download active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33: Remove/acknowledge topology error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34: Exit commissioning mode</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35: Carry out first commissioning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70: Initialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>80: Reset active</td>
<td></td>
</tr>
<tr>
<td></td>
<td>99: Internal software error</td>
<td></td>
</tr>
</tbody>
</table>

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

### r0002 Drive operating display / Drv_op_display

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>0: o0.0 No torque direction switched on</td>
<td>Operating display for the drive.</td>
</tr>
<tr>
<td></td>
<td>1: o0.1 Torque direction I switched on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: o0.2 Torque direction II switched on</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9: o0.9 Wait for enable from master</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10: o1.0 Wait time for brake opening time running</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11: o1.1 Wait for operating enable at terminal 13</td>
<td></td>
</tr>
<tr>
<td></td>
<td>12: o1.2 Wait for operating enable (signal source acc. to p0852)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>13: o1.3 Wait time after withdrawing a jog command running</td>
<td></td>
</tr>
<tr>
<td></td>
<td>14: o1.4 Wait until the field has been reversed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15: o1.5 Wait for operating enable from the optimization run</td>
<td></td>
</tr>
<tr>
<td></td>
<td>16: o1.6 Wait for withdrawal of the immediate pulse inhibit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>17: o1.7 Wait for SINAMICS DCM connected in parallel in status o0.0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18: o1.8 Operating state o1.8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19: o1.9 Operating state o1.9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20: o2.0 Wait for setpoint</td>
<td></td>
</tr>
<tr>
<td></td>
<td>21: o2.1 Operating state o2.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>22: o2.2 Operating state o2.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30: o3.0 Wait for the thyristor check to be completed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>31: o3.1 Wait for line supply symmetry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>32: o3.2 Wait for a DC contactor to pick up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>33: o3.3 Wait for the feedback signal &quot;main contactor&quot;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>34: o3.4 Operating state o3.4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>35: o3.5 Operating state o3.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>40: o4.0 Wait for voltage at 1U1, 1V1, 1W1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>41: o4.1 Wait until fuse monitoring signals OK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42: o4.2 Operating state o4.2</td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

43: o4.3 Operating state o4.3
44: o4.4 Operating state o4.4
45: o4.5 Wait until CCP pre-charged
50: o5.0 Wait for field current actual value
51: o5.1 Wait for voltage at 3U1, 3W1
52: o5.2 Operating state o5.2
53: o5.3 Operating state o5.3
60: o6.0 Wait until auxiliaries have been switched on
61: o6.1 Wait for small setpoint
62: o6.2 Operating state o6.2
63: o6.3 Operating state o6.3
70: o7.0 Wait for power-on via terminal 12
71: o7.1 Wait for power-on (signal source according to p0840)
72: o7.2 Stopping saved
73: o7.3 Wait for parallel master to power up
74: o7.4 Start of an optimization run
75: o7.5 Wait until SINAMICS DCM conn. in par. are rdy to switch on
76: o7.6 Operating state o7.6
77: o7.7 Operating state o7.7
78: o7.8 Operating state o7.8
79: o7.9 Operating state o7.9
80: o8.0 Switching on inhibited
81: o8.1 Simulation mode active
82: o8.2 Operating state o8.2
83: o8.3 Operating state o8.3
90: o9.0 Operating state o9.0
91: o9.1 Quick stop (OFF3) (signal source acc. to p0848) present
92: o9.2 Quick stop (OFF3) (signal source acc. to p0849) present
93: o9.3 Quick stop (OFF3) saved
94: o9.4 SS1 command (Safe Stop 1) present
95: o9.5 Operating state o9.5
96: o9.6 Operating state o9.6
97: o9.7 Operating state o9.7
98: o9.8 Operating state o9.8
99: o9.9 Operating state o9.9
100: o10.0 Operating state o10.0
101: o10.1 Voltage disconnect (OFF2) (signal source acc. to p0844)
102: o10.2 Voltage disconnect (OFF2) (signal source acc. to p0845)
103: o10.3 E stop (safety shutdown) (terminal 105/106)
104: o10.4 STO command (Safe Torque Off) present
105: o10.5 Operating state o10.5
106: o10.6 CUD right
107: o10.7 Operating state o10.7
108: o10.8 Operating state o10.8
109: o10.9 Operating state o10.9
110: o11.0 Fault present
120: o12.0 Initializ. of line voltage sensing for field in progress
121: o12.1 Initializ. of line voltage sensing for armature in progr.
122: o12.2 Operating state o12.2
123: o12.3 Reading out data of the gating modules
124: o12.4 Offset calibr. of curr. act. val. sensing being performed
125: o12.5 Read out data from the power unit
126: o12.6 Initializing the second processor (TMS320)
127: o12.7 Operating state o12.7
128: o12.8 Operating state o12.8
129: o12.9 Operating state o12.9

Dependency:
Refer to: r0046

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

Note:
OC: Operating condition
RFG: Ramp-function generator
COMM: Commissioning
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0002</td>
<td><strong>TM150 operating display / TM150 op_display</strong></td>
<td>Can be changed: -</td>
<td>For several missing enable signals, the corresponding value with the highest number is displayed.</td>
</tr>
<tr>
<td></td>
<td><strong>TM150</strong></td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Data type:</strong> Integer16</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>P-Group:</strong> -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Min</strong></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Operating display for Terminal Module 150 (TM150)</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td>0: Module in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40: Module not in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50: Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60: Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70: Initialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>120: Module de-activated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>200: Wait for booting/partial booting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>250: Device signals a topology error</td>
<td></td>
</tr>
<tr>
<td>r0002</td>
<td><strong>TM15D/DO operating display / TM15D op_display</strong></td>
<td>Can be changed: -</td>
<td>For several missing enable signals, the corresponding value with the highest number is displayed.</td>
</tr>
<tr>
<td></td>
<td><strong>TM15D/DO</strong></td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Data type:</strong> Integer16</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>P-Group:</strong> -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Min</strong></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Operating display for Terminal Module 15 (TM15).</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td>0: Module in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40: Module not in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50: Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60: Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70: Initialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>120: Module de-activated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>200: Wait for booting/partial booting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>250: Device signals a topology error</td>
<td></td>
</tr>
<tr>
<td>r0002</td>
<td><strong>TM31 operating display / TM31 op_display</strong></td>
<td>Can be changed: -</td>
<td>For several missing enable signals, the corresponding value with the highest number is displayed.</td>
</tr>
<tr>
<td></td>
<td><strong>TM31</strong></td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Data type:</strong> Integer16</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>P-Group:</strong> -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Min</strong></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Operating display for Terminal Module 31 (TM31).</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td>0: Module in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>40: Module not in cyclic operation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>50: Alarm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>60: Fault</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>70: Initialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>120: Module de-activated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>200: Wait for booting/partial booting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>250: Device signals a topology error</td>
<td></td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

#### p0003  BOP access level / BOP acc_level

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the access level for reading and writing parameters via the Basic Operator Panel (BOP).</th>
</tr>
</thead>
</table>
| Value | 1: Standard  
2: Extended  
3: Expert  
4: Service |
| Note | A higher set access level also includes the lower one.  
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). |

<table>
<thead>
<tr>
<th>p0004  BOP display filter / BOP disp_filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
</tr>
</tbody>
</table>
| Value | 0: All parameters  
1: Displays, signals  
2: Power unit  
3: Motor  
4: Encoder/pos enc  
5: Technology/units  
7: Digital inputs/outputs, commands, sequence control  
12: Functions  
14: Control  
15: Data sets  
20: Communication  
21: Faults, alarms, monitoring functions  
28: Free function blocks  
47: Trace and function generator  
50: OA parameters  
90: Topology  
98: Command Data Sets (CDS)  
99: Drive Data Sets (DDS) |
| Dependency | Refer to: p0003 |
| Notice | The display filter via p0004 provides precise filtering and displays the corresponding parameters only when p0009 and p0010 = 0. |
2 Parameters

2.2 List of parameters

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.

<table>
<thead>
<tr>
<th>p0005[0...1]</th>
<th>BOP operating display selection / BOP op_disp sel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
<td><strong>Can be changed: U, T</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td>0</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td>65535</td>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

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

**Index:**

\[0\] = Parameter number
\[1\] = Parameter index

**Dependency:** Refer to: p0006

**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.

<table>
<thead>
<tr>
<th>p0005[0...1]</th>
<th>BOP operating display selection / BOP op_disp sel</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</strong></td>
<td><strong>Can be changed: U, T</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td>0</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td>65535</td>
<td><strong>Factory setting</strong></td>
</tr>
</tbody>
</table>

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

**Index:**

\[0\] = Parameter number
\[1\] = Parameter index

**Dependency:** Refer to: p0006

**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.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BOP operating display selection / BOP op_disp sel</th>
<th>BOP operating display mode / BOP op_disp_mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0005[0...1]</strong></td>
<td>Sets the parameter number and parameter index for display for p0006 = 2, 4 for the Basic Operator Panel (BOP).</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>
</tr>
<tr>
<td></td>
<td>Example for the SERVO drive object: p0005[0] = 21, p0005[1] = 0: Actual speed smoothed (r0021)</td>
<td>Value: 4: p0005</td>
</tr>
<tr>
<td></td>
<td>p0005[0] = 25, p0005[1] = 0: Output voltage smoothed (r0025)</td>
<td><strong>Dependency:</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td>[0] = Parameter number</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>[1] = Parameter index</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Description:**
- **p0005[0]...[1]**
  - Can be changed: U, T
  - Data type: Unsigned16
  - P-Group: -
  - Not for motor type: -
  - Min: 0
  - Max: 65535
  - **Index:**
    - [0]: 2
    - [1]: 0

**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.
  2. 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.

**Description:**
- **p0006**
  - Can be changed: U, T
  - Data type: Integer16
  - P-Group: -
  - Not for motor type: -
  - Min: 4
  - Max: 4

**Value:**
- 4: p0005

**Dependency:**
- Refer to: p0005

**Note:**
- Mode 4 is available for all drive objects.

**Description:**
- **p0006**
  - Can be changed: U, T
  - Data type: Integer16
  - P-Group: -
  - Not for motor type: -
  - Min: 4
  - Max: 4

**Value:**
- 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.
2 Parameters
2.2 List of parameters

**p0007 BOP background lighting / BOP lighting**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Factory setting**

**Description:**
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.

**Note:**
p0007 = 0: Background lighting is always switched on (factory setting).

**p0008 BOP drive object after booting / BOP DO after boot**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Expert list:** 1

**Description:**
Sets the required drive object that is active at the Basic Operator Panel (BOP) after booting.

**Note:**
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.

**p0009 Device commissioning parameter filter / Dev comm par_filt**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** C1, T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Expert list:** 1

**Description:**
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.

**Value:**
0: Ready
1: Device configuration
2: Defining the drive type/function module
3: Drive base configuration
4: Data set base configuration
29: Device download
30: Parameter reset
50: OA application configuration
55: OA application installation

**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 drive 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.

p0010 Drive commissioning parameter filter / Drv comm. par_filt

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>30</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the parameter filter to commission a drive.
Setting this parameter filters out the parameters that can be written into in the various commissioning steps.

Value:
0: Ready
1: Quick commissioning
4: Encoder commissioning
15: Data sets
29: Only Siemens int
30: Reserved

Note: The drive can only be powered up outside the drive commissioning (drive 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.

p0010 TM150 commissioning parameter filter / TM150 com par_filt

<table>
<thead>
<tr>
<th>TM150</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>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>30</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

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.
2 Parameters

2.2 List of parameters

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** TM15DI/DO commissioning the parameterizing filter / TM15D com par_filt

**TM15DI_DO**
- **Can be changed:** C2(1), T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 30
- **Access level:** 1

**Description:**
Sets the parameter filter for commissioning a Terminal Module 15 (TM15).
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

**TM31**
- **Can be changed:** C2(1), T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 30
- **Access level:** 1

**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.

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

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** Functions
- **Not for motor type:** -
- **Min:** 0
- **Max:** 65535
- **Access level:** 3

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

**Dependency:**
Refer to: p0012, p0013
2 Parameters

2.2 List of parameters

### p0012 BOP password acknowledgement (p0013) / BOP passw ackn p13

| Description: | Acknowledges the password for the Basic Operator Panel (BOP). |
| Dependency: | Refer to: p0011, p0013 |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0012</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Functions</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>65535</td>
</tr>
</tbody>
</table>

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

| 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. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description:</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0013[0...49]</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Functions</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>65535</td>
</tr>
</tbody>
</table>

### p0015 Macro drive unit / Macro drv unit

| 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. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description:</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0015</td>
<td>Can be changed: C1</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>999999</td>
</tr>
</tbody>
</table>

| Access level: | 1 |
| Func. diagram: | - |
| Unit selection: | - |
| Expert list: | 1 |
| Factory setting | - |
| Dyn. index: | - |
| Unit group: | - |
| Scaling: | - |
| Min | - |
| Max | - |

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2 Parameters

2.2 List of parameters

**p0015 Macro drive object / Macro DO**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI.DO, TM31</td>
<td>Runs the corresponding macro files. The selected macro file must be available on the memory card/device memory. Example: p0015 = 6 --&gt; the macro file PM000006.ACX is run.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>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).</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**r0018 Control Unit basic firmware version / CU Basic FW Vers**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the basic firmware version of the Control Unit. The version of existing firmware on the device memory is displayed in r7844.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

#### r0019.0...14

**CO/BO: Control word BOP / STW BOP**

<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 control word for the Basic Operator Panel (BOP).</td>
<td>-</td>
<td>-</td>
<td>3</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>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>

#### r0020

**Speed setpoint smoothed / n_set smth**

<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 actual smoothed speed setpoint at the speed controller input.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Dependency:**

- 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**

<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 smoothed actual value of the motor speed.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Dependency:**

- Refer to: r0022, p0045, r0063
- 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 actual value is available smoothed (r0021, r0022, r0063[1] with p0045) and unsmoothed (r0063[0]).

#### r0022

**Speed actual value rpm smoothed / n_act rpm smooth**

<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 smoothed actual value of the motor speed.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Dependency:**

- r0022 is identical to r0021, however, it always has units of rpm and contrary to r0021 cannot be changed over.
- Refer to: r0021, p0045, r0063
### 2 Parameters

#### 2.2 List of parameters

**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 actual value is available smoothed (r0021, r0022, r0063[1] with p0045) and unsmoothed (r0063[0]).

---

<table>
<thead>
<tr>
<th>r0027</th>
<th>CO: Absolute actual current smoothed / I_act abs val smth</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Func. diagram: 6850</td>
</tr>
<tr>
<td>- [A]</td>
<td>Scaling: p2002</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>- [A]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>- [A]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**

Displays the smoothed actual current value.

**Dependency:**

Refer to: p0045, 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:**

- 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 value of the current actual value is available smoothed (r0027, r0068[1] with p0045) and unsmoothed (r0068[0]).

---

<table>
<thead>
<tr>
<th>r0031</th>
<th>Actual torque smoothed / M_act smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Func. diagram: 6850</td>
</tr>
<tr>
<td>- [Nm]</td>
<td>Scaling: p2003</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>- [Nm]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>- [Nm]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**

Displays the smoothed torque actual value.

**Dependency:**

Refer to: p0045, 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 torque actual value is available smoothed (r0031, r0080[1] with p0045) and unsmoothed (r0080[0]).

---

<table>
<thead>
<tr>
<th>r0032</th>
<th>CO: Active power actual value smoothed / P_actv_act smth</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Func. diagram: 2450</td>
</tr>
<tr>
<td>- [kW]</td>
<td>Scaling: r2004</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>- [kW]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>- [kW]</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**

Displays the smoothed actual value of the active power.

**Notice:**

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

**Note:**

- Smoothing time constant = 100 ms
- The active power is available smoothed (r0032, r0082[1] with p0045) and unsmoothed (r0082[0]).
### r0035

**CO: Motor temperature / Mot temp**

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

- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 7008, 8017

- **P-Group:** Displays, signals
- **Unit group:** 21_1
- **Unit selection:** p0505

- **Not for motor type:** -
- **Scaling:** p2006
- **Expert list:** 1

- **Min**
  - - [°C]

- **Max**
  - - [°C]

**Description:**
Display and connector output for 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.
- 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.

### p0045

**Display values smoothing time constant / Disp_val T_smooth**

- **Values:**
  - Can be changed: U, T
  - Calculated: -
  - Access level: 2

- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6810, 6850

- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -

- **Not for motor type:** -

- **Min**
  - 0.00 [ms]

- **Max**
  - 10000.00 [ms]

- **Factory setting**
  - 1.00 [ms]

**Description:**
Sets the smoothing time constant for the following display values:
- r0063[1], r0068[1], r0080[1], r0082[1]

### r0046.0...31

**CO/BO: Missing enable sig / Missing enable sig**

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

- **Data type:** Unsigned32
- **Dyn. index:** -
- **Func. diagram:** 2655

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

- **Not for motor type:** -

- **Min**
  - -

- **Max**
  - -

**Description:**
Display and BICO output for missing enable signals that are preventing the closed-loop drive control from being commissioned.

**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>OFF1 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>OFF2 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>OFF3 enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Operation enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Ramp-function generator enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Ramp-function generator start missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Setpoint enable missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>OFF1 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>OFF2 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>OFF3 enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Pulse enable internal missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Drive inactive or not operational</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>28</td>
<td>Brake open missing</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>30</td>
<td>Speed controller inhibited</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Jog setpoint active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r0002

**Note:**
The value r0046 = 0 indicates that all enable signals are present.
- Bit 00 = 1 (enable signal missing), if:
  - the signal source in p0840 is a 0 signal.
  - there is a "switching on inhibited".
2 Parameters

2.2 List of parameters

Bit 01 = 1 (enable signal missing), if:
- the signal source in p0844 or p0845 is a 0 signal.
Bit 03 = 1 (enable signal missing), if:
- the signal source in p0852 is 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:
- the commissioning mode is selected (p0009 > 0 or p0010 > 0) or there is an OFF2 fault response or the OFF1 signal source (p0840) is changed.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0049[0...3]</td>
<td>Encoder data set effective / EDS effective</td>
</tr>
<tr>
<td>r0050.0</td>
<td>CO/BO: Command Data Set CDS effective / CDS effective</td>
</tr>
<tr>
<td>r0051.0...1</td>
<td>CO/BO: Drive Data Set DDS effective / DDS effective</td>
</tr>
</tbody>
</table>

**r0049[0...3] Encoder data set effective / EDS effective**

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

- DC_CTRL,
- DC_CTRL_R,
- DC_CTRL_R_S,
- DC_CTRL_S

- Data type: Unsigned8
- Dyn. index: -
- Func. diagram: 8565

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

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

- Min -
- Max -
- Factory setting -

**Description:** Displays the effective Encoder Data Sets (EDS).

**Index:**

- [0] = Reserved
- [1] = Encoder 1 Encoder Data Set EDS effective
- [2] = Encoder 2 Encoder Data Set EDS effective
- [3] = -

**Dependency:** Refer to: p0187, p0188

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

**r0050.0 CO/BO: Command Data Set CDS effective / CDS effective**

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

- DC_CTRL,
- DC_CTRL_R,
- DC_CTRL_R_S,
- DC_CTRL_S

- Data type: Unsigned8
- Dyn. index: -
- Func. diagram: 8560

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

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

- Min -
- Max -
- Factory setting -

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

**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>CDS eff bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

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

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

**r0051.0...1 CO/BO: Drive Data Set DDS effective / DDS effective**

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

- DC_CTRL,
- DC_CTRL_R,
- DC_CTRL_R_S,
- DC_CTRL_S

- Data type: Unsigned8
- Dyn. index: -
- Func. diagram: 8565

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

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

- Min -
- Max -
- Factory setting -

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

**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>DDS eff bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DDS eff bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p0820, p0821, r0837
### 2 Parameters

#### 2.2 List of parameters

**r0056.13**  
**CO/BO: Status word, closed-loop control / ZSW cl-loop ctrl**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: 2526</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
</tbody>
</table>

**Description:**  
Display and BICO output for the status word of the closed-loop control.

**Bit field:**
- Bit 13: Signal name
  - Current/torque limiting
  - Signal 1: signal
  - Signal 0: 0 signal
  - Active
  - Inactive
  - FP: 6060

**r0060**  
**CO: Speed setpoint before the setpoint filter / n_set before filt.**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
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<tr>
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</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: 3155</td>
</tr>
<tr>
<td>Unit group: 3_1</td>
</tr>
<tr>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:**  
Displays the actual speed setpoint at the speed controller input.

**Dependency:**  
Refer to: r0020

**Note:**  
The speed setpoint is available smoothed (r0020) and unsmoothed (r0060).

**r0061[0...1]**  
**CO: Actual speed unsmoothed / n_act unsmoothed**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 2</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: 1580, 4710, 6810</td>
</tr>
<tr>
<td>Unit group: 3_1</td>
</tr>
<tr>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:**  
Displays the unsmoothed actual speed values sensed by the encoders.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2

**r0063[0...1]**  
**CO: Speed actual value / n_act**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
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<td>Calculated: -</td>
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<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: 6810</td>
</tr>
<tr>
<td>Unit group: 3_1</td>
</tr>
<tr>
<td>Unit selection: p0505</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
<tr>
<td>- [rpm]</td>
</tr>
</tbody>
</table>

**Description:**  
Displays the actual speed actual value for speed control.

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

**Dependency:**  
Refer to: r0021, r0022, p0045, r0061

**Note:**  
The speed actual value is available smoothed (r0021 with 100 ms, r0022 with 100 ms, r0063 with p0045) and unsmoothed (r0063[0], r0061).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0068[0...1] CO: Absolute current actual value / I_act abs val</td>
<td>Displays actual absolute current.</td>
<td>[0] = Unsmoothed</td>
<td>Refer to: r0027, p0045</td>
<td>The absolute value of the current actual value is available smoothed (r0027 with 100 ms, r0068[1] with p0045) and unsmoothed (r0068[0]).</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Unit group: -</td>
<td>Func. diagram: 6850</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2002</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- [A]</td>
<td>- [A]</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r0080[0...1] CO: Torque actual value / M_act | Display and connector output for actual torque value. | [0] = Unsmoothed | Refer to: r0031, p0045 | The value is available smoothed (r0031 with 100 ms, r0080[1] with p0045) and unsmoothed (r0080[0]). |
| Data type: FloatingPoint32 | Dyn. index: - | Access level: 3 |
| P-Group: Displays, signals | Unit group: 7_1 | Func. diagram: 6850 |
| Not for motor type: - | Scaling: p2003 | Unit selection: p0505 |
| Min | Max | Expert list: 1 |
| - [Nm] | - [Nm] | Factory setting |

| r0082[0...1] CO: Active power actual value / P_act | Displays the instantaneous active power. | [0] = Unsmoothed | Refer to: r0032 | The active power is available smoothed (r0032 with 100 ms, r0082[1] with p0045) and unsmoothed (r0082[0]). |
| Data type: FloatingPoint32 | Dyn. index: - | Access level: 3 |
| P-Group: Displays, signals | Unit group: 14_5 | Func. diagram: - |
| Not for motor type: - | Scaling: r2004 | Unit selection: p0505 |
| Min | Max | Expert list: 1 |
| - [kW] | - [kW] | Factory setting |

| p0097 Select drive object type / Select DO type | Executes an automatic device configuration. | Refer to: r0098, p0099 |
| Data type: Integer16 | Dyn. index: - | Access level: 1 |
| P-Group: Topology | Unit group: - | Func. diagram: - |
| Not for motor type: - | Scaling: - | Unit selection: - |
| Min | Max | Expert list: 1 |
| 0 | 15 | Factory setting |

Description: Executes an automatic device configuration.

Value: 0: No selection

Dependency: Refer to: p0098, p0099

Note: For p0097 = 0, p0099 is automatically set to the factory setting.
### 2.2 List of parameters

#### r0098[0...5] Actual device topology / Device_act topo

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...5]</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** Topology  
**Not for motor type:** -  
**Min**  
**Max**  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Expert list:** 1  
**Unit selection:** -  
**Func. diagram:** -  
**Factory setting**

**Description:** Displays the automatically detected actual device topology in coded form.

**Index:**
- [0] = DRIVE-CLiQ socket X100
- [1] = DRIVE-CLiQ socket X101
- [2...5] = Reserved

**Dependency:** Refer to: p0097, p0099

**Note:**
- Topology coding: abcd efgh hex
  - a = 0
  - b = 0
  - c = 0
  - d = no. of motor encoders
  - e = no. of additional encoders
  - 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.

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

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...5]</td>
<td>C1(1)</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** Topology  
**Not for motor type:** -  
**Min**  
**Max**  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Expert list:** 1  
**Unit selection:** -  
**Func. diagram:** -  
**Factory setting**

**Description:** Sets the device target topology in coded form (refer to r0098). The setting is made during commissioning.

**Index:**
- [0] = DRIVE-CLiQ socket X100
- [1] = DRIVE-CLiQ socket X101
- [2...5] = Reserved

**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

**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.
- 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).
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0101[n]</td>
<td>Drive object numbers / DO numbers</td>
<td>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. The numbers are automatically allocated. For the commissioning software, this object number cannot be entered using the expert list, but is automatically assigned when inserting an object.</td>
</tr>
</tbody>
</table>

| r0102[0...1] | Number of drive objects / DO count | Displays the number of existing or existing and prepared drive objects. 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. |

| p0103[n] | Application-specific view / Appl_spec view | The application-specific view of an existing drive object is entered into each index. The parameter cannot be changed. The application-specific views are defined in files on the memory card with the following structure: PDDxxxyy.ACX xx: Application-specific view (p0103) yyy: Type of drive object (p0107) Example: PD052017.ACX -> "017" stands for the drive object of type DC_CTRL -> "052" is the number of the view for this drive object |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0101[n]</td>
<td>Signing16</td>
<td>2</td>
<td>Topology</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>r0102[0...1]</td>
<td>Signing16</td>
<td>2</td>
<td>Topology</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>p0103[n]</td>
<td>Signing16</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Parameter</td>
<td>Description</td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>r0103</strong> Application-specific view / Appl_spec view</td>
<td>Displays the application-specific view of the individual drive object.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Dyn. index: ; Func. diagram:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: ; Unit selection:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ; Scaling: ; Expert list: 1</td>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>65535</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0105</strong> Activate/de-activate drive object / DO act/deact</td>
<td>Setting to activate/de-activate a drive object.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T ; Calculated: ; Access level: 2</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: ; Func. diagram:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: ; Unit selection:</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Not for motor type: ; Scaling: ; Expert list: 1</td>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0105</strong> Activate/de-activate drive object / DO act/deact</td>
<td>Setting to activate/de-activate a drive object.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: ; Func. diagram:</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: ; Unit selection:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ; Scaling: ; Expert list: 1</td>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0105</strong> Activate/de-activate drive object / DO act/deact</td>
<td>Setting to activate/de-activate a drive object.</td>
<td></td>
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<td></td>
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<td>Data type: Integer16</td>
<td>Dyn. index: ; Func. diagram:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: ; Unit selection:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: ; Scaling: ; Expert list: 1</td>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>0</td>
<td>2 1</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Dependency:**
- Refer to: p0107, r0107
- Refer to: r0106
- Refer to: r0106

**Notice:**
- 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.
- 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.
- 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.
### 2 Parameters

#### 2.2 List of parameters

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

**Dependency:**
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.

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.

**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 a component has been deactivated, only the component with the correct serial number may be inserted, or none at all.
  - 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**

<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><strong>Dyn. index:</strong> -</td>
<td><strong>Func. diagram:</strong> -</td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Closed-loop control</td>
<td><strong>Unit selection:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
<td><strong>Factory setting</strong></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<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

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

**Dependency:**
Refer to: r0106

**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 a component has been deactivated, only the component with the correct serial number may be inserted, or none at all.
  - 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.
## 2.2 List of parameters

### r0106 Drive object active/inactive / DO act/inact

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit 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>-</td>
<td></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

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

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed: C1(2)</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>600</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** The type of an existing drive object is entered into each index.

**Value:**
- 0: -
- 1: SINAMICS S
- 2: SINAMICS G
- 3: SINAMICS I
- 4: SINAMICS NX/CX32
- 6: SINAMICS DC
- 9: SINAMICS S110
- 10: ACTIVE INFEED CONTROL
- 11: SERVO
- 12: VECTOR
- 13: VECTORMV
- 14: VECTORGL
- 15: VECTOR3P
- 16: VECTORSL
- 17: DC_CTRL
- 18: VECTORM2C
- 19: VECTORDM
- 20: SMART INFEED CONTROL
- 21: RENEWABLE INFEED CONTROL
- 30: BASIC INFEED CONTROL
- 35: BRAKE MODULE M2C
- 40: ACTIVE INFEED CONTROLMV
- 41: BASIC INFEED CONTROLMV
- 42: ACTIVE INFEED CONTROLM2C
- 51: SINAMICS_G120_230 (SingleDO-Drive which combines Device+Vector)
- 52: SINAMICSG120_240_2 (SingleDO-Drive which combines Device+Vector)
- 53: SINAMICS_G120_CU250S_V (SingleDO-Drive which combines Device+Vector)
- 54: SINAMICSG120_G120D(SingleDO-Drive which combines Device+Vector)
- 55: SINAMICSG120_G120D_S (SingleDO Drive combines Device+Servo)
- 56: SINAMICSG110M (SingleDO-Drive which combines Device+Vector)
- 57: SINAMICS ET200
- 58: Link variant for Sinamics Microbasiissystem
- 70: HLA
- 100: TB30 (Terminal Board)
- 102: SINAMICS MV
- 150: DRIVE-CLIQ Hub Module
- 200: TM31 (Terminal Module)
- 201: TM41 (Terminal Module)
- 202: TM17 High Feature (Terminal Module)
- 203: TM15 (Terminal Module)
2 Parameters

2.2 List of parameters

| 204: | TM15 (Terminal Module for SINAMICS) |
| 205: | TM54F - Master (Terminal Module) |
| 206: | TM54F - Slave (Terminal Module) |
| 207: | TM120 (Terminal Module) |
| 208: | TM150 (Terminal Module) |
| 254: | CU-LINK |
| 300: | ENCODER |
| 600: | SINAMICS V60-G2 V80-G2 |

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.

<table>
<thead>
<tr>
<th>r0107</th>
<th>Drive object type / DO type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td></td>
</tr>
<tr>
<td>Unit group:</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>600</td>
</tr>
</tbody>
</table>

Description:
Displays the type of each drive object.

Value:

0: -
1: SINAMICS S
2: SINAMICS G
3: SINAMICS I
4: SINAMICS NX/CX32
6: SINAMICS DC
9: SINAMICS S110
10: ACTIVE INFEED CONTROL
11: SERVO
12: VECTOR
13: VECTORMV
14: VECTORGL
15: VECTOR3P
16: VECTORS3L
17: DC_CTRL
18: VECTORM2C
19: VECTORDM
20: SMART INFEED CONTROL
21: RENEWABLE INFEED CONTROL
30: BASIC INFEED CONTROL
35: BRAKE MODULE M2C
40: ACTIVE INFEED CONTROLMV
41: BASIC INFEED CONTROLMV
42: ACTIVE INFEED CONTROLM2C
51: SINAMICS G120 230 (SingleDO-Drive which combines Device+Vector)
52: SINAMICS G120 240_2 (SingleDO-Drive which combines Device+Vector)
53: SINAMICS G120_CU250S_V (SingleDO Drive combines Device+Vector)
54: SINAMICS G120 G120D (SingleDO-Drive which combines Device+Vector)
55: SINAMICS_G120_CU250S_S (SingleDO Drive combines Device+Servo)
56: SINAMICS G110M (SingleDO-Drive which combines Device+Vector)
57: SINAMICS ET200
58: Link variant for Sinamics Microbasissystem
70: HLA
100: TB30 (Terminal Board)
102: SINAMICS MV
150: DRIVE-Cliq Hub Module
200: TM31 (Terminal Module)
201: TM41 (Terminal Module)
202: TM17 High Feature (Terminal Module)
203: TM15 (Terminal Module)
204: TM15 (Terminal Module for SINAMICS)
2 Parameters

2.2 List of parameters

- 205: TM54F - Master (Terminal Module)
- 206: TM54F - Slave (Terminal Module)
- 207: TM120 (Terminal Module)
- 208: TM150 (Terminal Module)
- 254: CU-LINK
- 300: ENCODER
- 600: SINAMICS V60-G2 V80-G2

Dependency:
Refer to: p0103, r0103

p0108[0...n] Drive objects function module / DO fct_mod
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

- Can be changed: C1(2)
- Calculated: -
- Access level: 2
- Data type: Unsigned32
- Dyn. index: -
- Func. diagram: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: -
- Max: -
- Factory setting: 0000 0000 0000 0000 0000 0000 0000 0000 bin

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

- Bit 18: Free function blocks
- 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.

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>
<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>
<tr>
<td>16</td>
<td>Bit 16</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Bit 17</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Bit 18</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>19</td>
<td>Bit 19</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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<tr>
<td>20</td>
<td>Bit 20</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Bit 21</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Bit 22</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Bit 23</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Bit 24</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</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>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>Bit 27</td>
<td>ON</td>
<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>
</tr>
<tr>
<td>30</td>
<td>Bit 30</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>Bit 31</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>32</td>
<td>Bit 32</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.
### 2 Parameters

#### 2.2 List of parameters

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the activated function module for the particular drive object.</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>16</td>
<td>Techn controller / Tech_ctrl</td>
<td>Activated</td>
<td>Not activated</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Free function blocks / FBLOCKS</td>
<td>Activated</td>
<td>Not activated</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>PROFINET CBE20 / PROFINET CBE20</td>
<td>Activated</td>
<td>Not activated</td>
<td>-</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 fct_mod**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Displays the activated function module for the particular drive object.</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>18</td>
<td>Free function blocks / FBLOCKS</td>
<td>Activated</td>
<td>Not activated</td>
<td>-</td>
</tr>
<tr>
<td>31</td>
<td>PROFINET CBE20 / PROFINET CBE20</td>
<td>Activated</td>
<td>Not activated</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**

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

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the basic sampling times.</td>
</tr>
</tbody>
</table>

**Description:**

The sampling times are set using p0112 and p0115. The values for the basic sampling times are determined as a result of these settings.

**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>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the selected basic sampling time for this drive object.</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r0110
### 2 Parameters

## 2.2 List of parameters

### r0111 Basic sampling time selection / t_basis sel

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM15DI_DO, TM31</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Displays the selected basic sampling time for this drive object.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td>For TB30 and the Terminal Module, this parameter has no significance.</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td>For TB30 and certain Terminal Modules, the sampling times can be set using p4099 (see description of p4099 for the Module in question).</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>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C1(3)</td>
<td>Calculated: -</td>
<td>Pre-assignment of the sampling times in p0115.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td>The clock cycles for the current controller / speed controller / - / setpoint channel / - / - / technology controller are defined as follows: p0112 = 3; 1000 / 2000 / - / 4000 / - / - / 4000 µs</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td>Value: 0: Expert 3: Standard</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td>For p0112 = 0 (expert) the individual sampling times in p0115 can be adjusted.</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1(3)</td>
<td>Calculated: -</td>
<td>Sets the basic sampling time for supplementary functions (DCC, free function blocks) on this object.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td>Only setting values that are an integer multiple of 125 µs are permissible.</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td>Index: [0] = Basic sampl time</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 [µs]</td>
<td>16000.00 [µs]</td>
<td>4000.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C1(3)</td>
<td>Calculated: -</td>
<td>Sets the sampling times for the control loops.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit 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 [µs]</td>
<td>16000.00 [µs]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**List Manual (LH8), 02/2015, 6RX1800-0ED76**
The default setting is made using p0112 and can only be individually changed for p0112 = 0 (expert).

** 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]).

Refer to: r0110, r0111, p0112

** Note:**
For function modules that can be activated (e.g. technology controller), the parameters values are pre-assigned.
The current controller sampling time (p0115[0]) is permanently set to 1 ms and cannot be changed.

---

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

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, TM31</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.00 [µs]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>16000.00 [µs]</td>
<td>4000.00 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

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

**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.

**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.

### r0116[0...1]
** Drive object clock cycle recommended / DO_clock recom **

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, TM15DI_DO, TM31</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Closed-loop control</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>- [µs]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>- [µs]</td>
<td>- [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**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
### p0121[0...n]

**Power unit component number / PU comp_no**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: C1(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: PDS</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S</td>
<td>P-Group: Data sets</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>199</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**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.

### p0124[0...n]

**Main component detection using LED / M_comp detect LED**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>CU_DC_R</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>CU_DC_R_S</td>
<td>P-Group: Converter</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

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

### p0125[0...n]

**Activate/de-activate power unit components / PU_comp act/deact**

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: C1(4), T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>Data type: Integer16</td>
<td>Dyn. index: PDS</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S</td>
<td>P-Group: Data sets</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Setting to activate/de-activate a power unit component.

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

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

**Caution:**
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. Instead 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.

**Notice:**
It is not permissible to de-activate drive objects with safety functions enabled.

**Note:**
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.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0140</td>
<td><strong>Number of Encoder Data Sets (EDS) / EDS count</strong></td>
</tr>
<tr>
<td></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C1(3)</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td></td>
<td>P-Group: Data sets</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
</tr>
<tr>
<td></td>
<td>Min: 1 Max: 16 Factory setting</td>
</tr>
<tr>
<td></td>
<td>Description: Sets the number of Encoder Data Sets (EDS).</td>
</tr>
<tr>
<td></td>
<td>Note: When parameterizing the drive with &quot;no encoder&quot; there must be at least one encoder data set (p0140 &gt;= 1).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p0141[0...n]</th>
<th><strong>Encoder interface (Sensor Module) component number / Enc_interf comp_no</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C1(4)</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td></td>
<td>P-Group: Data sets</td>
</tr>
<tr>
<td></td>
<td>Min: 0 Max: 199 Factory setting</td>
</tr>
<tr>
<td></td>
<td>Description: This parameter is used to assign the encoder data set to an encoder evaluation (e.g. SMC).</td>
</tr>
<tr>
<td></td>
<td>This unique component number is assigned when parameterizing the topology.</td>
</tr>
<tr>
<td></td>
<td>Only a component number can be entered that corresponds to an encoder evaluation.</td>
</tr>
<tr>
<td></td>
<td>Note: If the encoder evaluation and encoder are integrated (motor with DRIVE-CLIQ), then their component numbers are identical.</td>
</tr>
<tr>
<td></td>
<td>For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142).</td>
</tr>
<tr>
<td></td>
<td>SMC: Sensor Module Cabinet</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p0142[0...n]</th>
<th><strong>Encoder component number / Encoder comp_no</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C1(4)</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td></td>
<td>P-Group: Data sets</td>
</tr>
<tr>
<td></td>
<td>Min: 0 Max: 199 Factory setting</td>
</tr>
<tr>
<td></td>
<td>Description: This parameter is used to assign the encoder data set to an encoder.</td>
</tr>
<tr>
<td></td>
<td>This assignment is made using the unique component number that was assigned when parameterizing the topology.</td>
</tr>
<tr>
<td></td>
<td>Only component numbers can be entered into this parameter that correspond to an encoder.</td>
</tr>
<tr>
<td></td>
<td>Note: If the encoder evaluation and encoder are integrated (motor with DRIVE-CLIQ), then their component numbers are identical.</td>
</tr>
<tr>
<td></td>
<td>For an SMC, different component numbers are assigned for the SMC (p0141) and the (actual) encoder (p0142).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p0144[0...n]</th>
<th><strong>Sensor Module detection via LED / SM detection LED</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned8</td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td></td>
<td>Min: 0 Max: 1 Factory setting</td>
</tr>
<tr>
<td></td>
<td>Description: Detects the Sensor Module assigned to this drive and data set.</td>
</tr>
<tr>
<td></td>
<td>Note: While p0144 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Sensor Module.</td>
</tr>
</tbody>
</table>
## 2.2 List of parameters

### p0145[0...n]

**Activate/de-activate encoder interface / Enc_intf act/deact**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Setting to activate/de-activate an encoder interface (Sensor Module).</td>
<td>0: De-activate component 1: Activate component 2: Component de-activate and not present</td>
<td>After inserting a component, before activating, first wait for Alarm A01317.</td>
<td>Refer to: r0146</td>
</tr>
</tbody>
</table>

- **Note:**
  - The de-activation of an encoder interface corresponds to the "parking encoder" function and has the same effect.
  - 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.
    - 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>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the &quot;active&quot; or &quot;inactive&quot; state of an encoder interface (Sensor Module).</td>
<td>0: Component inactive 1: Component active</td>
<td></td>
<td>Refer to: p0105, p0145, p0480</td>
</tr>
</tbody>
</table>

### r0147[0...n]

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the version of the EEPROM data of the Sensor Module.</td>
<td></td>
<td>Refer to: r0157</td>
<td></td>
</tr>
</tbody>
</table>

---

SINAMICS DCM  
List Manual (LH8), 02/2015, 6RX1800-0ED76
### 2 Parameters

#### 2.2 List of parameters

**Note:**

The value 1010100 should be interpreted as V01.01.01.00.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0148[0...n]</strong></td>
<td><strong>Sensor Module firmware version / SM FW version</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: EDS, p0140 Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1 Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the firmware version of the Sensor Module.

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

**Note:**

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

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0151</strong></td>
<td><strong>Terminal Module component number / TM comp_no</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Can be changed: C1(4) Calculated: - Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Unit group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1 Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>199</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** 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.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0154</strong></td>
<td><strong>Terminal Module detection via LED / TM detection LED</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Can be changed: U, T Calculated: - Access level: 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Unit group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1 Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Detects the Terminal Module assigned to this drive and data set. While p0154 = 1, the READY LED flashes green/orange or red/orange with 2 Hz at the appropriate Terminal Module.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0157</strong></td>
<td><strong>Terminal Module EEPROM data version / TM EEPROM version</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: - Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Unit group: - Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1 Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r0147

**Note:**

Example: The value 1010100 should be interpreted as V01.01.01.00.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0158</td>
<td>Terminal Module firmware version / TM FW version</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Displays the firmware version of the Terminal Module.</td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>Dependency: Refer to: r0018, r0148, r0197, r0198</td>
<td>P-Group: Terminals</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Note: Example:</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>p0170</td>
<td>Number of Command Data Sets (CDS) / CDS count</td>
<td>Can be changed: C1(3)</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Sets the number of Command Data Sets (CDS).</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>Note: It is possible to toggle between command parameters (BICO parameters) using this data set changeover.</td>
<td>P-Group: Commands</td>
<td>Unit 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></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>p0180</td>
<td>Number of Drive Data Sets (DDS) / DDS count</td>
<td>Can be changed: C1(3)</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Sets the number of Drive Data Sets (DDS).</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8565</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Data sets</td>
<td>Unit 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></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>p0187[0...n]</td>
<td>Encoder 1 encoder data set number / Enc 1 EDS number</td>
<td>Can be changed: C1(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Assign a drive data set (= index) the corresponding encoder data set (EDS) for encoder 1.</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 8570</td>
</tr>
<tr>
<td></td>
<td>The value corresponds to the number of the assigned encoder data set.</td>
<td>P-Group: Data sets</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Example: Encoder data set 0 should be assigned to encoder 1 in drive data set 2.</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>--&gt; p0187[2] = 0</td>
<td>0</td>
<td>99</td>
<td>99</td>
</tr>
<tr>
<td></td>
<td>Note: A value of 99 means that no encoder has been assigned to this drive data set (not configured).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

### Encoder 2 encoder data set number / Enc 2 EDS number

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0188[0...n]</td>
<td>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 data set 1 should be assigned to encoder 2 in drive data set 2. -&gt; p0188[2] = 1</td>
</tr>
</tbody>
</table>

**Note:** A value of 99 means that no encoder has been assigned to this drive data set (not configured).

### Topology component status / Top comp stat

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0196[0...255]</td>
<td>Displays the status of the components. r0196[0]: group status of all components r0196[1]: Status of component with component number 1 ... r0196[255]: Status of component with component number 255</td>
</tr>
</tbody>
</table>

**Note:** Re bit 03 ... 00:
- Bit 3, 2, 1, 0 = 0, 0, 0, 0 -> component not available.
- Bit 3, 2, 1, 0 = 0, 0, 0, 1 -> power-up, non-cyclic DRIVE-CLiQ communication (LED = orange).
- Bit 3, 2, 1, 0 = 0, 1, 0, 0 -> operating mode, cyclic DRIVE-CLiQ communication (LED = green).
- Bit 3, 2, 1, 0 = 0, 1, 0, 1 -> alarm (LED = green).
- Bit 3, 2, 1, 0 = 0, 1, 0, 0 -> fault (LED = red).
- Bit 3, 2, 1, 0 = 0, 1, 1, 0 --> detection via LED and operating mode (LED = green/orange).
- Bit 3, 2, 1, 0 = 0, 1, 0, 1 --> detection via LED and alarm (LED = green/orange).
- Bit 3, 2, 1, 0 = 0, 1, 1, 1 --> detection via LED and fault (LED = red/orange).
- Bit 3, 2, 1, 0 = 1, 0, 0, 0 --> firmware being downloaded (LED = green/red with 0.5 Hz).
- Bit 3, 2, 1, 0 = 1, 0, 0, 1 --> firmware download completed, wait for POWER ON (LED = green/red with 2.0 Hz).

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.
2 Parameters

2.2 List of parameters

### r0197[0...1] Bootloader version / Bootloader vers

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
<th>Index 0</th>
<th>Index 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Displays the bootloader version.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Displays the bootloader version.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Displays the bootloader version 3 (for CU320-2 and CU310-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Value 0 means that boot loader 3 is not available.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

### r0198[0...2] BIOS/EEPROM data version / BIOS/EEPROM vers

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
<th>Index 0</th>
<th>Index 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Displays the BIOS and EEPROM data version.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Displays the BIOS version</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>r0198[1]: EEPROM data version EEPROM 0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>r0198[2]: EEPROM data version EEPROM 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r0018, 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>Type</th>
<th>Description</th>
<th>Index 0</th>
<th>Index 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Freely assignable name for a drive object.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The parameter is not influenced by setting the factory setting.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0200[0...n] Power unit code number actual / PU code no. act</td>
<td>Displays the unique code number of the power unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0201[0...n] Power unit code number / PU code no</td>
<td>Code number of the power unit.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r0203[0...15] Firmware package name / FW pkg name</td>
<td>Displays the name of the firmware package on the memory card/device memory.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0340[0...n] Automatic calculation motor/control parameters / Calc auto par</td>
<td>Setting to automatically calculate motor parameters and closed-loop control parameters from rating plate data.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**p0400[0...n]**  
**Encoder type selection / Enc_typ sel**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>DC_CTRL_R,</th>
<th>DC_CTRL_R_S,</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong> C2(1, 4)</td>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>P-Group:</strong> Encoder</td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Dyn. index:</strong> EDS, p0140</td>
<td><strong>Unit group:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Access level:</strong> 1</td>
<td><strong>Func. diagram:</strong> 1580, 4704</td>
<td><strong>Unit selection:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
</tbody>
</table>

**Description:** Selects the encoder from the list of encoder types supported.

**Value:**

- 0: No encoder
- 3001: 1024 HTL A/B R
- 3002: 1024 TTL A/B R
- 3003: 2048 HTL A/B R
- 3005: 1024 HTL A/B
- 3006: 1024 TTL A/B
- 3007: 2048 HTL A/B
- 3008: 2048 TTL A/B
- 3009: 1024 HTL A/B unipolar
- 3011: 2048 TTL A/B unipolar
- 3020: 2048 TTL A/B R, with sense
- 3081: SSI, Singleturn, 24 V
- 3082: SSI, Multiturn 4096, 24 V
- 3090: 4096, HTL, A/B, SSI, Singleturn
- 9999: User-defined
- 20000: Encoder from OEM encoder list

**Notice:** 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 p0400 = 10000. 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.

For p0400 = 10000 the following applies:

If an identification is not possible, then p0400 is set to 0.

**p0401[0...n]**  
**Encoder type OEM selection / Enc type OEM sel**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>DC_CTRL_R,</th>
<th>DC_CTRL_R_S,</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong> C2(1, 4)</td>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>P-Group:</strong> Encoder</td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Dyn. index:</strong> EDS, p0140</td>
<td><strong>Unit group:</strong> -</td>
<td><strong>Scaling:</strong> -</td>
</tr>
<tr>
<td><strong>Access level:</strong> 2</td>
<td><strong>Func. diagram:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td><strong>Expert list:</strong> 1</td>
</tr>
</tbody>
</table>

**Description:**

Selects the encoder from the list of encoder types that the OEM supports.

**Note:**

The connected encoder can be identified by p0401 = 10000. This means that the encoder must support this and is possible in the following cases: Motor with DRIVE-CLiQ, encoder with EnDat interface.

If an identification is not possible, then p0401 is set to 0.

The encoder data (e.g. pulse number p0408) can only be changed when p0401 = 9999.

Using p0401 = 20000, the encoder type can be selected from the list of OEM encoders using p0401.
### 2 Parameters

#### 2.2 List of parameters

**p0402[0...n]**  
Gearbox type selection / Gearbox type sel  

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>DC_CTRL_R,</th>
<th>DC_CTRL_R_S,</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(1, 4)</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit 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 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10100</td>
<td>9999</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>DC_CTRL,</th>
<th>DC_CTRL_R,</th>
<th>DC_CTRL_R_S,</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: 4704</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit 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 |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0000 0000 0000 0000 0000 0000 0000 0000 bin</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>
<tr>
<td>12</td>
<td>Equidistant zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Irregular zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Distance-coded zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Acceleration</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Notice:
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:
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.

<table>
<thead>
<tr>
<th>p0405[0...n]</th>
<th>Square-wave encoder track A/B / Sq-wave enc A/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4) Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 Dyn. index: EDS, p0140 Func. diagram: 4704</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder Unit 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 0000 1111 bin</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Settings for the track A/B in a square-wave encoder.
For square-wave encoders, p0404.3 must also be 1.

Bit field: | Bit | Signal name | 1 signal | 0 signal | FP |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Signal</td>
<td>Bipolar</td>
<td>Unipolar</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Level</td>
<td>TTL</td>
<td>HTL</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Track monitoring</td>
<td>A/B &lt;&gt; -A/B</td>
<td>None</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Zero pulse</td>
<td>Same as A/B track</td>
<td>24 V unipolar</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Switching threshold</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Pulse/direction</td>
<td>Active</td>
<td>Inactive</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>
### p0407[0...n] Linear encoder grid division / Enc grid div

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 [nm]</td>
<td></td>
<td></td>
<td>16000 [nm]</td>
</tr>
</tbody>
</table>

**Description:** Sets the grid division for a linear encoder.

**Notice:**
- 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 number / Rot enc pulse No.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>16777215</td>
</tr>
</tbody>
</table>

**Description:** Sets the number of pulses for a rotary encoder.

**Notice:**
- 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Data type: Unsigned16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td></td>
<td></td>
<td>0000 bin</td>
</tr>
</tbody>
</table>

**Description:** Setting to invert actual values.

**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>Invert speed actual value</td>
<td>Yes</td>
<td>No</td>
<td>4710</td>
</tr>
<tr>
<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, r0094
  - Bit 01: r0482, r0483
### p0411[0...n] Measuring gear configuration / Meas gear 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>Measuring gear activate position tracking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Axis type</td>
<td>Linear axis</td>
<td>Rotary axis</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Measuring gear reset position</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration for position tracking of a measuring gear.

**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).

### p0412[0...n] Measuring gear absolute encoder rotary revolutions virtual / Abs rot rev

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td>4194303</td>
</tr>
</tbody>
</table>

**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).
## 2 Parameters
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data Type</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0413[0...n]</strong></td>
<td>Measuring gear position tracking tolerance window / Pos track window</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.00</td>
<td>4294967300.00</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Caution:</td>
<td>Rotation, e.g. through a complete encoder range is not detected.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>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).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0414[0...n]</strong></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>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>16</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the number of relevant bits for the redundant coarse position value.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0415[0...n]</strong></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>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>31</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>MSB: Most Significant Bit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0416[0...n]</strong></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>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4294967295</td>
<td>22000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the non safety-relevant measuring steps of POS1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refer to: r0473</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- 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).
- Rotation, e.g. through a complete encoder range is not detected.

**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.
- Rotation, e.g. through a complete encoder range is not detected.
- 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).
- Rotation, e.g. through a complete encoder range is not detected.
2 Parameters

### 2.2 List of parameters

#### p0417[0...n]
**Encoder safety comparison algorithm (detected) / Safety comp_algo**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Integer16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:** Sets 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
- 12: SMC30 safety algorithm
- 255: Safety algorithm unknown

#### p0418[0...n]
**Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: 1580, 4704</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:** Sets the fine resolution in bits of the incremental position actual values.

**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**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Unsigned8</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: 1580, 4704</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:** Selecting the encoder connection.
2 Parameters

2.2 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>SUB-D</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Terminal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**p0421[0...n]**  
Absolute encoder rotary multiturn resolution / Enc abs multiturn

- **DC_CTRL**, **DC_CTRL_R**, **DC_CTRL_R_S**, **DC_CTRL_S**
- **Can be changed:** C2(4)
- **Data type:** Unsigned32
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:**
  - Value: 0
  - Factory setting: 4294967295
- **Max:**
  - Value: 4096
  - Factory setting: 4294967295

**Description:**
Sets the number of rotations that can be resolved for a rotary absolute encoder.

**Notice:**
- 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

- **DC_CTRL**, **DC_CTRL_R**, **DC_CTRL_R_S**, **DC_CTRL_S**
- **Can be changed:** C2(4)
- **Data type:** Unsigned32
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:**
  - Value: 0 [nm]
  - Factory setting: 4294967295 [nm]
  - Note: 100 [nm]
- **Max:**
  - Value: 4294967295 [nm]
  - Factory setting: 100 [nm]

**Description:**
Sets the resolution of the absolute position for a linear encoder.

**Notice:**
- 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 serial protocol of an absolute encoder provides the position with a certain resolution, e.g., 100 nm. This value must be entered here.

**p0423[0...n]**  
Absolute encoder rotary singleturn resolution / Enc abs singleturn

- **DC_CTRL**, **DC_CTRL_R**, **DC_CTRL_R_S**, **DC_CTRL_S**
- **Can be changed:** C2(4)
- **Data type:** Unsigned32
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:**
  - Value: 0
  - Factory setting: 1073741823
- **Max:**
  - Value: 8192
  - Factory setting: 8192

**Description:**
Sets the number of measuring steps per revolution for a rotary absolute encoder.

**Notice:**
- The resolution refers to the absolute position.

**p0424[0...n]**  
Encoder linear zero mark distance / Enc lin ZM_dist

- **DC_CTRL**, **DC_CTRL_R**, **DC_CTRL_R_S**, **DC_CTRL_S**
- **Can be changed:** C2(4)
- **Data type:** Unsigned16
- **P-Group:** Encoder
- **Not for motor type:** -
- **Min:**
  - Value: 0 [mm]
  - Factory setting: 65535 [mm]
  - Note: 20 [mm]

**Description:**
Sets the distance between two zero marks for a linear encoder.

This information is used for zero mark monitoring.
2 Parameters

2.2 List of parameters

Notice:
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 distance-coded zero marks, this means the basic distance.

**p0425[0...n]**
Encoder rotary zero mark distance / Enc rot dist ZM

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</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>Max</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description:
Sets the distance in pulses between two zero marks for a rotary encoder. This information is used for zero mark monitoring.

Notice:
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 distance-coded zero marks, this means the basic distance.

**p0426[0...n]**
Encoder zero mark differential distance / Enc ZM Dif_dist

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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>Max</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</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".

Notice:
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 distance-coded zero marks, this means the basic distance.

**p0427[0...n]**
Encoder SSI baud rate / Enc SSI baud rate

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</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>Max</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description:
Sets the baud rate for an SSI encoder.

Notice:
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>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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>Max</td>
</tr>
<tr>
<td>Access level: 3</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Scaling: -</td>
</tr>
<tr>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description:
Sets the minimum delay time between two data transfers of the absolute value for an SSI encoder.
2 Parameters

2.2 List of parameters

Notice: 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.

<table>
<thead>
<tr>
<th>p0429[0...n]</th>
<th>Encoder SSI configuration / Enc SSI config</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>DC_CTRL_S,</td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Not for</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>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></td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0000 0000 bin</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>

Notice: 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: Re bit 06:

The quiescent signal level of the data line corresponds to the inverted, set level.

<table>
<thead>
<tr>
<th>p0430[0...n]</th>
<th>Sensor Module configuration / SM config</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>DC_CTRL_S,</td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Not for</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>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></td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>1110 0000 0000 1000 0000 0000 0000 bin</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.

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.
2 Parameters

2.2 List of parameters

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.

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.

---

<table>
<thead>
<tr>
<th>p0431[0...n]</th>
<th>Angular commutation offset / Ang_com offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Encoder</td>
<td>Min</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
</tr>
<tr>
<td>-180.00 [°]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>180.00 [°]</td>
<td>0.00 [°]</td>
</tr>
</tbody>
</table>

**Description:** Sets the angular commutation offset.

**Notice:** The angular commutation offset cannot be generally taken from other drive systems.

**Note:** Angular commutation offset, angular difference between electrical position of encoder and flux position.

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.

---

<table>
<thead>
<tr>
<th>p0432[0...n]</th>
<th>Gearbox factor encoder revolutions / Grbx_fact enc_rev</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Dyn. index: EDS, p0140</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Integer16</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Encoder</td>
<td>Min</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
</tr>
<tr>
<td>1</td>
<td>Factory setting</td>
</tr>
<tr>
<td>10000</td>
<td>1</td>
</tr>
</tbody>
</table>

**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.
### 2 Parameters

#### 2.2 List of parameters

**p0433[0...n]**  
**Gearbox factor motor/load revolutions / Grbx_fact mot_rev**

<table>
<thead>
<tr>
<th>Access level: 3</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>
<tr>
<td>Max</td>
</tr>
<tr>
<td>10000</td>
</tr>
<tr>
<td>Factory setting</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>Access level: 3</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>
<tr>
<td>Max</td>
</tr>
<tr>
<td>65535</td>
</tr>
<tr>
<td>Factory setting</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 with 1 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>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: C2(4)</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
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<tr>
<td>P-Group: Encoder</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
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<tr>
<td>0</td>
</tr>
<tr>
<td>Max</td>
</tr>
<tr>
<td>65535</td>
</tr>
<tr>
<td>Factory setting</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).
### 2 Parameters

#### 2.2 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.

#### p0436[0...n]

**Encoder SSI parity bit / Enc SSI parity bit**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</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.

#### p0437[0...n]

**Sensor Module configuration extended / SM conf ext**

<table>
<thead>
<tr>
<th>DC_CTRL,</th>
<th>Can be changed: C2(4)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: EDS, p0140</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</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>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Data logger</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<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>
</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 dn/dt 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>-</td>
</tr>
<tr>
<td>25</td>
<td>Deselect monitoring multiturn representation in Gx_XIST2</td>
<td>Yes</td>
<td>No</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 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
2 Parameters
2.2 List of parameters

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 bits 05, 04:
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 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.

### p0438[0...n]

**Squarewave encoder filter time / Enc_t_filt**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Data type: FloatingPoint32</th>
<th>P-Group: Encoder</th>
<th>Not for motor type: -</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL_R</td>
<td>Can be changed: C2(4)</td>
<td>Dyn. index: EDS, p0140</td>
<td>Unit group: -</td>
<td>0.00 [µs]</td>
<td>100.00 [µs]</td>
<td>0.64 [µs]</td>
</tr>
<tr>
<td>DC_CTRL_R_S</td>
<td>Calculated: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Access level: 3</td>
<td>Func. diagram: -</td>
<td>Factory setting</td>
<td></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
### 2 Parameters

#### 2.2 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>p0439[0...n]</td>
<td>Encoder ramp-up time / Enc ramp-up time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: EDS, p0140</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></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>
<td></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>65535 [ms]</td>
<td>0 [ms]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0440[0...n]</td>
<td>Copy encoder serial number / Copy enc ser_no</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<td></td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: EDS, p0140</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0441[0...n]</td>
<td>Encoder commissioning serial number part 1 / Enc comm ser_no 1</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(4)</td>
<td>Calculated: CALC_MOD_ALL</td>
<td>Access level: 4</td>
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<tr>
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<td></td>
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</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0000 hex</td>
<td>FFFF FFFF hex</td>
<td>0000 hex</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

- p0439[0...n] Encoder ramp-up time / Enc ramp-up time
  - Sets the ramp-up time for the encoder.
  - The encoder supplies stable track signals once this time has elapsed.
  - The effective filter time is displayed in r0452.

**Note:**

- This parameter is automatically pre-set for encoders from the encoder list (p0400).

**p0440[0...n] Copy encoder serial number / Copy enc ser_no**

- 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

**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**

- Serial number part 1 of the encoder for the commissioning.

**Dependency:**

- Refer to: p0440, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0463, r0464
2 Parameters

2.2 List of parameters

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>p0442[0...n]</td>
<td>Encoder commissioning serial number part 2 / Enc comm ser_no 2</td>
<td>Serial number part 2 of the encoder for the commissioning.</td>
<td>A value of zero is displayed if an encoder is not present.</td>
</tr>
<tr>
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<td>Can be changed: C2(4)</td>
<td>Refer to: p0440, p0441, p0444, p0445, r0460, r0461, r0462, r0463, r0464</td>
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<tr>
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<td>Data type: Unsigned32</td>
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<td>P-Group: Encoder</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>0000 hex</td>
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<td></td>
<td>Factory setting</td>
<td>0000 hex</td>
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<tr>
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<td>Calculated: CALC_MOD_ALL</td>
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<tr>
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<td>Dyn. index: EDS, p0140</td>
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</tr>
<tr>
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<td>Unit group: -</td>
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<td></td>
</tr>
<tr>
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<td>Scaling: -</td>
<td></td>
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<tr>
<td></td>
<td>Expert list: 1</td>
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<td></td>
</tr>
<tr>
<td>p0443[0...n]</td>
<td>Encoder commissioning serial number part 3 / Enc comm ser_no 3</td>
<td>Serial number part 3 of the encoder for the commissioning.</td>
<td>A value of zero is displayed if an encoder is not present.</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(4)</td>
<td>Refer to: p0440, p0441, p0444, p0445, r0460, r0461, r0462, r0463, r0464</td>
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<td>Data type: Unsigned32</td>
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<td>P-Group: Encoder</td>
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<td></td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
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</tr>
<tr>
<td></td>
<td>Min</td>
<td>0000 hex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
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<td>Factory setting</td>
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<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0444[0...n]</td>
<td>Encoder commissioning serial number part 4 / Enc comm ser_no 4</td>
<td>Serial number part 4 of the encoder for the commissioning.</td>
<td>A value of zero is displayed if an encoder is not present.</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(4)</td>
<td>Refer to: p0440, p0441, p0442, p0443, p0445, r0460, r0461, r0462, r0463, r0464</td>
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<td>Data type: Unsigned32</td>
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<td>P-Group: Encoder</td>
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<td>Not for motor type: -</td>
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<tr>
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<td>Calculated: CALC_MOD_ALL</td>
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<td></td>
<td>Dyn. index: EDS, p0140</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p0445[0...n]</td>
<td>Encoder commissioning serial number part 5 / Enc comm ser_no 5</td>
<td>Serial number part 5 of the encoder for the commissioning.</td>
<td>A value of zero is displayed if an encoder is not present.</td>
</tr>
<tr>
<td></td>
<td>Can be changed: C2(4)</td>
<td>Refer to: p0440, p0441, p0442, p0443, p0444, r0460, r0461, r0462, r0463, r0464</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>0000 hex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>FFFF FFFF hex</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td>0000 hex</td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r0452[0...2]**  Squarewave encoder filter time display / Enc t_filt displ

| DC_CTRL, | Data type: Encoder | Dyn. index: - | Unit group: - |
| DC_CTRL_R, | P-Group: Encoder | Unit selection: - |
| DC_CTRL_R_S, | Not for motor type: - | |
| DC_CTRL_S | Min | Max |

**Description:**
Displays the effective filter time for a squarewave encoder.
The filter time is set using p0438.

**Index:**
[0] = Encoder 1
[1] = Encoder 2
[2] = -

**Dependency:**
Refer to: p0438

**Note:**
A value of zero is displayed if an encoder is not present.

**p0453[0...n]**  Pulse encoder evaluation zero speed measuring time / Enc_ev n_0 t_meas

| DC_CTRL, | Data type: Encoder | Dyn. index: EDS, p0140 |
| DC_CTRL_R, | P-Group: Encoder | Unit selection: - |
| DC_CTRL_R_S, | Not for motor type: - | |
| DC_CTRL_S | Min | Max |

**Description:**
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.

**Dependency:**
Refer to: r0452

**Note:**
This function is required for slow-running motors so that actual speeds close to zero can be output correctly.

**r0455[0...2]**  Encoder configuration recognized / Enc config act

| DC_CTRL, | Data type: Encoder | Dyn. index: - |
| DC_CTRL_R, | P-Group: Encoder | Unit selection: - |
| DC_CTRL_R_S, | Not for motor type: - | |
| DC_CTRL_S | Min | Max |

**Description:**
Displays the detected encoder configuration.
In this case, the encoder must automatically support the function (e.g. encoder with EnDat interface).

**Index:**
[0] = Encoder 1
[1] = Encoder 2
[2] = -

**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>
<tr>
<td>12</td>
<td>Equidistant zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Irregular zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Distance-coded zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Acceleration</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Value</th>
<th>Value</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Track A/B analog</td>
<td>[0] = Encoder 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Voltage level 5 V</td>
<td>[1] = Encoder 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Voltage level 24 V</td>
<td>[2] = -</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Remote sense (only SMC30)</td>
<td></td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Resolver excit</td>
<td></td>
<td>Yes</td>
<td>No</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.

### r0456[0...2]

#### Encoder configuration supported / Enc_config supp

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - | Calculated: - | Access level: 3 |
| Data type: Unsigned32 | Dyn. index: - | Func. diagram: - |
| P-Group: Encoder | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |

**Description:**
Displays the encoder configuration supported by the Sensor Module.

**Index:**

- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**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>
<tr>
<td>12</td>
<td>Equidistant zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Irregular zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Distance-coded zero mark</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Acceleration</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Track A/B analog</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Voltage level 5 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Voltage level 24 V</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Remote sense (only SMC30)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Resolver excit</td>
<td>Yes</td>
<td>No</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.

### r0458[0...2]

#### Sensor Module properties / SM properties

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - | Calculated: - | Access level: 3 |
| Data type: Unsigned32 | Dyn. index: - | Func. diagram: 4704 |
| P-Group: Encoder | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:**
Sets the Sensor Module configuration.
### 2 Parameters

#### 2.2 List of parameters

| Index: | [0] = Encoder 1  
|        | [1] = Encoder 2  
|        | [2] = -         |

<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 data available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Motor data available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Temperature sensor connection</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Module temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Sensor Module permits parking/unparking</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Evaluation through several temperature channels possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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>Speed diagnostics in the Sensor Module</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Configuring without park state possible</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Extended functions available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Extended encoder fault handling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Extended singleturn/multiturn information available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Evaluation function reserve</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Pole position identification</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Burst oversampling</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Continuous oversampling</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>Extended speed calculation being used (only SMC30)</td>
<td>Yes</td>
<td>No</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>Commutation with zero mark can be deselected</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>Disconnection of encoder power supply on parking supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>26</td>
<td>Parking with temperature evaluation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>27</td>
<td>SSI position value extrapolation</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>

#### Dependency:
Refer to: p0437, 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 deselected using p0430.23.

**Re bit 24:**
If the property is set, commutation to the selected zero mark can be carried out.
2 Parameters

2.2 List of parameters

### r0459[0...2]
**Sensor Module properties extended / SM prop ext**

- **DC_CTRL:** Can be changed: -
- **DC_CTRL_R:** Data type: Unsigned32
- **DC_CTRL_R_S:** P-Group: Encoder
- **DC_CTRL_S:** Not for motor type: -

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**Dependency:** Refer to: p0437
**Note:** A value of zero is displayed if an encoder is not present.

**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 logger</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<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>
</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 dn/dt 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>09</td>
<td>Function p0426, p0439 supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Pulse/direction interface</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>Absolute position for incremental encoder supported</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Spindle functionality</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Additional temperature sensor available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Internal encoder temperature available</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Extended multiturn resolution</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>24</td>
<td>Multiturn via battery</td>
<td>Yes</td>
<td>No</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>
</tr>
<tr>
<td>26</td>
<td>Track monitoring de-selection</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: 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[0...2]
**Encoder serial number part 1 / Enc ser_no 1**

- **DC_CTRL:** Can be changed: -
- **DC_CTRL_R:** Data type: Unsigned32
- **DC_CTRL_R_S:** P-Group: Encoder
- **DC_CTRL_S:** Not for motor type: -

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**Dependency:** Refer to: p0441, p0442, p0443, p0444, p0445, r0461, r0462, r0463, r0464
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0461[0...2]</td>
<td>Encoder serial number part 2 / Enc ser_no 2</td>
<td>Displays the actual serial number part 2 of the appropriate encoder.</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0462, r0463, r0464</td>
</tr>
<tr>
<td>r0462[0...2]</td>
<td>Encoder serial number part 3 / Enc ser_no 3</td>
<td>Displays the actual serial number part 3 of the appropriate encoder.</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0463, r0464</td>
</tr>
<tr>
<td>r0463[0...2]</td>
<td>Encoder serial number part 4 / Enc ser_no 4</td>
<td>Displays the actual serial number part 4 of the appropriate encoder.</td>
<td>Refer to: p0441, p0442, p0443, p0444, p0445, r0460, r0461, r0462, r0464</td>
</tr>
<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>
</tr>
</tbody>
</table>
### r0465[0...27] Encoder 1 identification number/serial number / Enc1 ID_no/Ser_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the identification/serial number of encoder 1.</td>
<td>0 = first character of the identification 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.</td>
<td>The individual characters of the identification/serial number are available coded as ASCII characters.</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Index x = 20 hex (blank) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Index x + 1 = 2F hex (slash) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Index x + 2 = 20 hex (blank) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Index x + 3 = first character of the serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Index y with contents = last character of the serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td>Can be changed:</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>Data type: Unsigned8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>P-Group: Encoder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td>Scaling:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert list:</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### r0466[0...27] Encoder 2 identification number/serial number / Enc2 ID_no/Ser_no

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the identification/serial number of encoder 2.</td>
<td>0 = first character of the identification 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.</td>
<td>The individual characters of the identification/serial number are available coded as ASCII characters.</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Index x = 20 hex (blank) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Index x + 1 = 2F hex (slash) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Index x + 2 = 20 hex (blank) --&gt; separation between the identification number of serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Index x + 3 = first character of the serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Index y with contents = last character of the serial number</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td>Can be changed:</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>Data type: Unsigned8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>P-Group: Encoder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td>Scaling:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert list:</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### r0469[0...2] Absolute encoder linear measuring step / Enc lin meas step

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the resolution of the absolute position for a linear absolute encoder.</td>
<td>0 = Encoder 1</td>
<td>Refer to: p0422</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>1 = Encoder 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>2 = Encoder 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>- [nm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>- [nm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access level:</td>
<td>Can be changed:</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>Data type: Unsigned32</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>P-Group: Encoder</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td>Scaling:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert list:</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min Max Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r0470[0...2]**  Redundant coarse position value valid bits / Valid bits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>Encoder</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>[0] = Encoder 1 [1] = Encoder 2 [2] = -</td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Data type</strong></td>
<td>Calculated</td>
</tr>
<tr>
<td><strong>Dyn. index</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Func. diagram</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection</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 valid bits of the redundant coarse position value.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**r0471[0...2]**  Redundant coarse position value fine resolution bits / Fine bit

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Integer16</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>Encoder</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>[0] = Encoder 1 [1] = Encoder 2 [2] = -</td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Data type</strong></td>
<td>Calculated</td>
</tr>
<tr>
<td><strong>Dyn. index</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Func. diagram</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection</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 number of valid bits for the fine resolution of the redundant coarse position value.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**r0472[0...2]**  Redundant coarse position value relevant bits / Relevant bits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>Encoder</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>[0] = Encoder 1 [1] = Encoder 2 [2] = -</td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Data type</strong></td>
<td>Calculated</td>
</tr>
<tr>
<td><strong>Dyn. index</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Func. diagram</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection</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 number of relevant bits for the redundant coarse position value.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**r0473[0...2]**  Non safety-relevant measuring steps position value pos1 / nsrPos1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data type</strong></td>
<td>Unsigned32</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>Encoder</td>
</tr>
<tr>
<td><strong>Index</strong></td>
<td>[0] = Encoder 1 [1] = Encoder 2 [2] = -</td>
</tr>
<tr>
<td><strong>Access level</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Data type</strong></td>
<td>Calculated</td>
</tr>
<tr>
<td><strong>Dyn. index</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Func. diagram</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection</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 non safety-relevant measuring steps of POS1.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Dependency:** Refer to: p0416
## 2 Parameters

### 2.2 List of parameters

#### r0474[0...2] Redundant coarse position value configuration / Red pos config

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Bit field</th>
<th>Access level</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the encoder configuration for the redundant coarse position value.</td>
<td>[0] = Encoder 1</td>
<td></td>
<td>3</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>[1] = Encoder 2</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>[2] = -</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></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>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Signal name</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Incrementer</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Encoder CRC least significant byte first</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Redundant coarse position val. most significant bit left-aligned</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Binary comparison not possible</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### r0475[0...2] Gx_XIST1 coarse position safe most significant bit / Gx_XIST1 safe MSB

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Bit field</th>
<th>Access level</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the bit number for the safe most significant bit (MSB) of the Gx_XIST1 coarse position.</td>
<td>[0] = Encoder 1</td>
<td></td>
<td>3</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>[1] = Encoder 2</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>[2] = -</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></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>
<td>-</td>
<td>-</td>
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<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Signal name</td>
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<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Encoder CRC least significant byte first</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Redundant coarse position val. most significant bit left-aligned</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Binary comparison not possible</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### r0477[0...2] CO: Measuring gear position difference / Meas gear pos diff

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Bit field</th>
<th>Access level</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the position difference before the measuring gear between powering down and powering up.</td>
<td>[0] = Encoder 1</td>
<td></td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>[1] = Encoder 2</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>[2] = -</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></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>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Signal name</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Incrementer</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
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<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

#### r0479[0...2] CO: Diagnostics encoder position actual value Gn_XIST1 / Diag Gn_XIST1

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Bit field</th>
<th>Access level</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive for diagnostics.</td>
<td>[0] = Encoder 1</td>
<td></td>
<td>3</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>[1] = Encoder 2</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>[2] = -</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
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<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Signal name</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Incrementer</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
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<td>Unit group:</td>
<td></td>
<td></td>
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<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Unit group:</td>
<td></td>
<td></td>
<td></td>
<td>Yes</td>
<td>Yes</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: Calculated:</td>
<td></td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

### Note:

- MSB: Most Significant Bit
- The increments are displayed in the format the same as r0483. The position difference should be read in encoder increments.
### 2 Parameters

#### 2.2 List of parameters

In contrast to r0482, the value is updated in each DRIVE-CLiQ basic clock cycle and displayed with sign.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**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).

**Description:**
Sets the signal source for the encoder control word Gn_STW according to PROFIdrive.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**Note:**
When the function module "basic positioner" (r0108.4 = 1) is activated, the following BICO interconnection is established:


**Description:**
Displays the encoder status word Gn_ZSW according to PROFIdrive.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = Encoder 3

**Note:**
Re bit 14:
Displays the acknowledgement for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.

---

**Table:**

<table>
<thead>
<tr>
<th>p0480[0...2]</th>
<th>CI: Encoder control word Gn_STW signal source / Enc Gn_STW S_src</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsinged32 / Integer16</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>Func. diagram:</td>
<td>1580, 4720, 4750</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Unit group:</td>
<td>Unit selection: -</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>
<tr>
<td>[0] = Encoder 1</td>
<td>[1] = Encoder 2</td>
</tr>
<tr>
<td>[2] = -</td>
<td></td>
</tr>
</tbody>
</table>

**Table:**

<table>
<thead>
<tr>
<th>r0481[0...2]</th>
<th>CO: Encoder status word Gn_ZSW / Enc Gn_ZSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>Func. diagram:</td>
<td>4704, 4730</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Encoder</td>
</tr>
<tr>
<td>Unit group:</td>
<td>Unit selection: -</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>
<tr>
<td>[0] = Encoder 1</td>
<td>[1] = Encoder 2</td>
</tr>
<tr>
<td>[2] = Encoder 3</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>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>

**Note:**
Displays the acknowledgement for "activate parking encoder" (Gn_STW.14 = 1) or encoder position actual value (Gn_XIST1) invalid.

---

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2 Parameters

2.2 List of parameters

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.

### r0482[0...2]
**CO:** Encoder actual position value Gn_XIST1 / Enc Gn_XIST1

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - | Calculated: - | Access level: 3 |
| DC_CTRL | Data type: Unsigned32 | Dyn. index: - | Func. diagram: 1580, 4704, 4735 |
| P-Group: Encoder | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:**
Display and connector output for the encoder actual position value Gn_XIST1 according to PROFIdrive.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**Note:**
- this value is reset if necessary when the "parking encoder" (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 \( \times \) 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 \( \times \) LCM(250 \( \mu \)s, 125 \( \mu \)s) = 4 \( \times \) 250 \( \mu \)s = 1 ms
  - Example 2: infeed, servo, vector
    - Update time = 4 \( \times \) LCM(250 \( \mu \)s, 125 \( \mu \)s, 500 \( \mu \)s) = 4 \( \times \) 500 \( \mu \)s = 2 ms

### r0483[0...2]
**CO:** Encoder actual position value Gn_XIST2 / Enc Gn_XIST2

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - | Calculated: - | Access level: 3 |
| DC_CTRL | Data type: Unsigned32 | Dyn. index: - | Func. diagram: 1580, 4704 |
| P-Group: Encoder | Unit 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.

**Recommendation:**
Possible causes:
- Re Error code = 4097, 4098: Defective Control Unit hardware.
- Re Error codes = 4099, 4100: Too many measuring pulses have occurred.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**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: Cancellation, reference block search (e.g. reference mark not available or input terminal for external zero mark not set). Zero mark is requested, however according to p0404.12/13/14 there is no zero mark (alarm A07565).
  5: Cancellation, fetch reference value (e.g. illegal change from reference mark search to flying measurement).
  6: Cancellation, flying measurement (e.g. input terminal for probe not set).
  7: Cancellation, fetch measured value (e.g. illegal change from flying measurement to reference mark search).
  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.

r0484[0...2] CO: Redundant coarse encoder position + CRC / Enc red pos+CRC

Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned32  Dyn. index: -  Func. diagram: -
P-Group: Encoder  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

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] = -

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".

r0485[0...2] CO: Measuring gear encoder raw value incremental / Enc raw val incr

Can be changed: -  Calculated: -  Access level: 1
Data type: Unsigned32  Dyn. index: -  Func. diagram: -
P-Group: Encoder  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

Description: Displays the raw value of the incremental encoder actual value before the measuring gear.

Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = -
2 Parameters

2.2 List of parameters

r0486[0...2]  CO: Measuring gear encoder raw value absolute / Enc raw val abs

- **Description:** Displays the raw value of the absolute encoder actual value before the measuring gear.
- **Index:**
  - [0] = Encoder 1
  - [1] = Encoder 2
  - [2] = -

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] = -

- **Bit field:**
  - 00: Request function 1
  - 01: Request function 2
  - 02: Request function 3
  - 03: Request function 4
  - 04: Request command bit 0
  - 05: Request command bit 1
  - 06: Request command bit 2
  - 07: Flying measurement mode/search for reference mark
  - 13: Request absolute value cyclic
  - 14: Request parking encoder
  - 15: Request acknowledge encoder fault

p0491  Motor encoder fault response ENCODER / Fault resp ENCODER

- **Description:** Sets the behavior for the ENCODER fault response (motor encoder).
- **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.

### Caution
For a value = 1, 2, 3, 5 the following applies:
- encoderless operation must have been started.
- if, for synchronous motors, an encoder fault occurs below the switchover speed p1755, when switching over to encoderless operation, the motor can stall.
For a value = 1, 5 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, 5 the following applies:
- Refer to the status signal "encoderless operation due to a fault" (BO: r1407.13).
- If, with r1407.13 = 1, a different drive data set is selected (e.g. interconnection from p0820), then the open-loop or closed-loop control type p1300 of this data set must match that of the original data set (e.g. p1300 = 21). Encoderless closed-loop controlled operation is kept when changing over.
For a value = 4, the following applies:
- The value can only be set for all motor data sets when p1231 = 3, 4.
- For synchronous motors, an armature short circuit is initiated on an encoder fault.
- For induction motors, DC braking is initiated on an encoder fault. DC braking must be commissioned (p1232, p1233, p1234).
For a value = 5, the following applies:
Same function as for value = 1. However, encoder faults are output as alarm and the message bit "Fault active" (r2139.3) is not set. The encoder fault has to be acknowledged via the encoder interface in order to resume operation with encoder.

### p0492
**Square-wave encoder maximum speed difference per sampling cycle** / n_dif max/samp_cyc

| DC_CTRL,  | Can be changed: U, T  | Calculated: CALC_MOD_REG | Access level: 3 |
| DC_CTRL_R,  | Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: - |
| DC_CTRL_R_S,  | P-Group: Encoder | Unit group: - | Unit selection: - |
| DC_CTRL_S,  | Not for motor type: - | Scaling: - | Expert list: 1 |
|            | Min | Max   | Factory setting |
|            | 0.00 [rpm] | 210000.00 [rpm] | 0.00 [rpm] |

**Description:**
Sets the maximum permissible speed difference within the current controller sampling time for squarewave encoders.
When the value is exceeded, depending on p0491, either encoderless closed-loop speed/torque control is selected or the drive is powered down.

**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.

### p0496[0...2]
**Encoder diagnostic signal selection** / Enc diag select

| DC_CTRL,  | Can be changed: U, T  | Calculated: - | Access level: 4 |
| DC_CTRL_R,  | Data type: Integer16 | Dyn. index: - | Func. diagram: - |
| DC_CTRL_R_S,  | P-Group: Encoder | Unit group: - | Unit selection: - |
| DC_CTRL_S,  | Not for motor type: - | Scaling: - | Expert list: 1 |
|            | 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
2 Parameters

2.2 List of parameters

18: r0498: Oversampling angle, r0499: Oversampling amount
19: r0498: Fault counter AB, r0499: raw value track A
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] = -

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 = 19 (resolver): counter: dec, channel A: 2900 mV <-> 26214 dec
Re p0496 = 19 (sin/cos 1 Vpp, EnDat): counter: dec, channel A: 500 mV <-> 21299 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
2 Parameters
2.2 List of parameters

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[0...2] CO: Encoder diagnostic signal double word / Enc diag DW

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Data type: Unsigned32
P-Group: Encoder
Not for motor type: -
Min -
Max -
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] = -
Dependency:
Refer to: p0496, r0498, r0499

r0498[0...2] CO: Encoder diagnostic signal low word / Enc diag low word

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Data type: Integer16
P-Group: Encoder
Not for motor type: -
Min -
Max -
Description: Displays the trace signal for encoder diagnostics (low component).
The signal to be output is selected in p0496.
Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = -
Dependency:
Refer to: p0496, r0497, r0499

r0499[0...2] CO: Encoder diagnostic signal high word / Enc diag high word

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Data type: Integer16
P-Group: Encoder
Not for motor type: -
Min -
Max -
Description: Displays the trace signal for encoder diagnostics (high component).
The signal to be output is selected in p0496.
Index:
[0] = Encoder 1
[1] = Encoder 2
[2] = -
Dependency:
Refer to: p0496, r0497, r0498
## Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0595</td>
<td>Selects the units for the parameters of the technology controller. For p0595 = 1, 2, the reference quantity set in p0596 is not active.</td>
<td>1: %&lt;br&gt;2: 1 referred no dimensions&lt;br&gt;3: bar&lt;br&gt;4: °C&lt;br&gt;5: Pa&lt;br&gt;6: ltr/s&lt;br&gt;7: m³/s&lt;br&gt;8: ltr/min&lt;br&gt;9: m³/min&lt;br&gt;10: ltr/h&lt;br&gt;11: m³/h&lt;br&gt;12: kg/s&lt;br&gt;13: kg/min&lt;br&gt;14: kg/h&lt;br&gt;15: t/min&lt;br&gt;16: t/h&lt;br&gt;17: N&lt;br&gt;18: kN&lt;br&gt;19: Nm&lt;br&gt;20: psi&lt;br&gt;21: °F&lt;br&gt;22: gallon/s&lt;br&gt;23: inch³/s&lt;br&gt;24: gallon/min&lt;br&gt;25: inch³/min&lt;br&gt;26: gallon/h&lt;br&gt;27: inch³/h&lt;br&gt;28: lb/s&lt;br&gt;29: lb/min&lt;br&gt;30: lb/h&lt;br&gt;31: lbf&lt;br&gt;32: lbf ft</td>
<td>Only the unit of the technology controller parameters are switched over (unit group 9_1). Refer to: p0596. When switching over from % into another unit, the following sequence applies:&lt;br&gt;- set p0596&lt;br&gt;- set p0595 to the required unit</td>
</tr>
</tbody>
</table>

| p0596 | 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. | 0.01<br>340.28235E36<br>1.00 | Refer to: p0595 |
2 Parameters

2.2 List of parameters

Notice: When changing over from one technological unit into another, or when changing the reference parameter, a changeover is not made.

**p0601[0...n]** Motor temperature sensor type / Mot_temp_sens type

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(3), U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: MDS</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the sensor type for the motor temperature monitoring.

Value:
- 0: No sensor
- 2: KTY84

Dependency:
- Refer to: r0458

**p0700[0...n]** Macro Binector Input (BI) / Macro BI

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>999999</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Runs the corresponding macro files.

Dependency:
- Refer to: p0015, p1000, p1500, r8571

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

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

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM15DI_DO, TM31</td>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>999999</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description: Runs the corresponding macro files.

Dependency:
- Refer to: r8571

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

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

### p0802 Data transfer: memory card as source/target / mem_card src/targ

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0802</td>
<td>Sets the number for data transfer of a parameter backup from/to memory card.</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Transfer from memory card to device memory (p0804 = 1):</td>
<td>Data type: Integer16</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>- Sets the source of parameter backup (e.g. p0802 = 48 --&gt; PS048xxx.ACX is the source).</td>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Transfer from non-volatile device memory to memory card (p0804 = 2):</td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>- Sets the target of parameter backup (e.g. p0802 = 23 --&gt; PS023xxx.ACX is the target).</td>
<td>Min</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### p0803 Data transfer: device memory as source/target / Dev_mem src/targ

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0803</td>
<td>Sets the number for data transfer of a parameter backup from/to device memory.</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Transfer from memory card to device memory (p0804 = 1):</td>
<td>Data type: Integer16</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>- Sets the target of the parameter backup (e.g. p0803 = 10 --&gt; PS010xxx.ACX is the target).</td>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Transfer from non-volatile device memory to memory card (p0804 = 2):</td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>- Sets the source of the parameter backup (e.g. p0803 = 11 --&gt; PS011xxx.ACX is the source).</td>
<td>Min</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

### p0804 Data transfer start / Data transf start

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0804</td>
<td>Sets the transfer direction and start of data transfer between the memory card and non-volatile device memory.</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p0802, p0804

**Notice:**
If the data between the volatile and non-volatile device memories differ, then it may be necessary to save the data on the memory card in a non-volatile fashion prior to the transfer (e.g. p0971 = 1).
2 Parameters

2.2 List of parameters

Example 1:
The parameter backup is to be transferred from the device memory to the memory card with setting 0. The parameter backup is to be stored on the memory card with setting 22.
p0802 = 22 (parameter backup stored on memory card as target with setting 22)
p0803 = 0 (parameter backup stored in device memory as source with setting 0)
p0804 = 2 (start data transfer from device memory to memory card)
--> PS000xxx.ACX is transferred from device memory to memory card and stored as PS022xxx.ACX.

Example 2:
The parameter backup is to be transferred from the memory card to the device memory with setting 22. The parameter backup is to be stored in the device memory as setting 0.
p0802 = 22 (parameter backup stored on memory card as source with setting 22)
p0803 = 0 (parameter backup stored in device memory as target with setting 0)
p0804 = 1 (start data transfer from memory card to device memory)
--> PS022xxx.ACX is transferred from memory card to device memory and stored as PS000xxx.ACX.

Value:
0: Inactive
1: Memory card to device memory
2: Device memory to memory card
1001: File on memory card cannot be opened
1002: File in device memory cannot be opened
1003: Memory card not found
1100: File cannot be transferred

Dependency:
Refer to: p0802, p0803

Notice:
The memory card must not be removed while data is being transferred.

Note:
If a parameter backup with setting 0 is detected on the memory card when the Control Unit is switched on (PS000xxx.ACX), this is transferred automatically to the device memory.
When the memory card is inserted, a parameter backup with setting 0 (PS000xxx.ACX) is automatically written to the memory card when the parameters are saved in a non-volatile memory (e.g. by means of "Copy RAM to ROM").
Once the data has been successfully transferred, this parameter is automatically reset to 0. If an error occurs, the parameter is set to a value > 1000. Possible fault causes:
p0804 = 1001:
The parameter backup set in p0802 as the source on the memory card does not exist or there is not sufficient memory space available on the memory card.
p0804 = 1002:
The parameter backup set in p0803 as the source in the device memory does not exist or there is not sufficient memory space available in the device memory.
p0804 = 1003:
No memory card has been inserted.

p0806 BI: Inhibit master control / PcCtrl inhibit

DC_CTRL
DC_CTRL_R
DC_CTRL_R_S
DC_CTRL_S

Can be changed: T
Data type: Unsigned32 / Binary
P-Group: Commands
Not for motor type: -
Min
Max
Access level: 3
Dyn. index: -
Unit group: -
Scaling: -
Factor setting

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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p0807.0</strong></td>
<td><strong>BO: Master control active / PcCtrl active</strong></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -&lt;br&gt;Data type: Unsigned8&lt;br&gt;P-Group: Displays, signals&lt;br&gt;Not for motor type: -&lt;br&gt;Min</td>
</tr>
<tr>
<td>Bit field:</td>
<td>Bit &lt;br&gt;Signal name &lt;br&gt;1 signal &lt;br&gt;0 signal</td>
</tr>
<tr>
<td>00</td>
<td>Master control active</td>
</tr>
<tr>
<td><strong>p0809[0...2]</strong></td>
<td><strong>Copy Command Data Set CDS / Copy CDS</strong></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: T&lt;br&gt;Data type: Unsigned8&lt;br&gt;P-Group: Commands&lt;br&gt;Not for motor type: -&lt;br&gt;Min</td>
</tr>
<tr>
<td>Index:</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Procedure: &lt;br&gt;1. In Index 0, enter which command data set should be copied.&lt;br&gt;2. In Index 1, enter the command data set that is to be copied into.&lt;br&gt;3. Start copying: Set index 2 from 0 to 1.&lt;br&gt;p0809[2] is automatically set to 0 when copying is completed.</td>
</tr>
<tr>
<td><strong>p0810</strong></td>
<td><strong>BI: Command data set selection CDS bit 0 / CDS select., bit 0</strong></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: T&lt;br&gt;Data type: Unsigned32 / Binary&lt;br&gt;P-Group: Commands&lt;br&gt;Not for motor type: -&lt;br&gt;Min</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Sets the signal source to select the Command Data Set bit 0 (CDS bit 0).</td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>Refer to: r0050, r0836&lt;br&gt;The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The Command Data Set selected using the binector inputs is displayed in r0836.&lt;br&gt;The currently effective command data set is displayed in r0050.&lt;br&gt;A Command Data Set can be copied using p0809.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<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>Copy Drive Data Set DDS / Copy DDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: C2(15)</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8565</td>
<td></td>
</tr>
<tr>
<td>P-Group: Data sets</td>
<td>Unit 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>31</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Copies one Drive Data Set (DDS) into another.

**Index:**
- [0] = Source Drive Data Set
- [1] = Target Drive Data Set
- [2] = Start copying procedure

**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.

| p0820[0...n] | BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0 | | |
| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(15), T | Calculated: - | Access level: 3 |
| Data type: Unsigned32 / Binary | Dyn. index: CDS, p0170 | Func. diagram: 8565, 8570 |
| P-Group: Data sets | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:**
Sets the signal source to select the Drive Data Set, bit 0 (DDS, bit 0).

**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 | | |
| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(15), T | Calculated: - | Access level: 3 |
| Data type: Unsigned32 / Binary | Dyn. index: CDS, p0170 | Func. diagram: 8565, 8570 |
| P-Group: Data sets | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**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.

| r0835.2 | CO/BO: Data set changeover status word / DDS_ZSW | | |
| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - | Calculated: - | Access level: 2 |
| Data type: Unsigned16 | Dyn. index: - | Func. diagram: 8575 |
| P-Group: Displays, signals | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |

**Description:**
Displays the status word for the drive data set changeover.

**Bit field:**
- **Bit** | **Signal name** | **1 signal** | **0 signal** | **FP**
- 02 | Internal parameter calculation active | Yes | No | -

**Note:**
Re bit 02:
A data set changeover is delayed by the time required for the internal parameter calculation.
2 Parameters

2.2 List of parameters

r0836.0  CO/BO: Command Data Set CDS selected / CDS selected

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the command data set (CDS) selected via the binector input.</td>
<td>Bit Signal name</td>
<td>Ref. to: r0050, p0810</td>
<td>Command data sets are selected via binector input p0810.</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>1 signal</td>
<td></td>
<td>The currently effective command data set is displayed in r0050.</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>0 signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td>FP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

r0837.0...1  CO/BO: Drive Data Set DDS selected / DDS selected

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the drive data set (DDS) selected via the binector input.</td>
<td>Bit Signal name</td>
<td>Ref. to: r0051, p0820, p0821</td>
<td>Drive data sets are selected via binector input p0820 and following.</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>1 signal</td>
<td></td>
<td>The currently effective drive data set is displayed in r0051.</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>0 signal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td>FP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

p0840[0...n]  BI: ON / OFF (OFF1) / ON / OFF (OFF1)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Dependency</th>
<th>Caution</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Sets the signal source for the command &quot;ON/OFF (OFF1)&quot;.</td>
<td>Bit Signal name</td>
<td>Ref. to: p1055, p1056</td>
<td>When <em>master control from PC</em> is activated, this binector input is ineffective.</td>
<td>For binector input p0840 = 0 signal, the motor can be moved, jogging using binector input p1055 or p1056. The command &quot;ON/OFF (OFF1)&quot; 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.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Note:**

For drives with closed-loop speed control (p50084 = 1), the following applies:
- BI: p0840 = 0 signal: OFF1 (braking with the ramp-function generator, then pulse suppression and switch-on inhibit)
For drives with closed-loop torque control (p50084 = 2), the following applies:
- BI: p0840 = 0 signal: immediate pulse suppression
For drives with closed-loop speed/torque control, the following applies:
- BI: p0840 = 0/1 signal: ON (pulses can be enabled)

**2 Parameters**

<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>Can be changed:</strong></td>
<td>T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Commands</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>1</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the first signal source for the command &quot;No coast down/coast down (OFF2)&quot;. The following signals are AND'ed: - BI: p0844 &quot;No coast-down / coast-down (OFF2) signal source 1&quot; - BI: p0845 &quot;No coast-down / coast-down (OFF2) signal source 2&quot; 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)</td>
</tr>
<tr>
<td><strong>Caution:</strong></td>
<td>When &quot;master control from PC&quot; is activated, this binector input is ineffective.</td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
</tr>
</tbody>
</table>

<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>Can be changed:</strong></td>
<td>T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Commands</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>1</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the second signal source for the command &quot;No coast down/coast down (OFF2)&quot;. The following signals are AND'ed: - BI: p0844 &quot;No coast-down / coast-down (OFF2) signal source 1&quot; - BI: p0845 &quot;No coast-down / coast-down (OFF2) signal source 2&quot; 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)</td>
</tr>
<tr>
<td><strong>Caution:</strong></td>
<td>When &quot;master control from PC&quot; is activated, this binector input is effective.</td>
</tr>
</tbody>
</table>
### 2.2 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><strong>p0848[0...n]</strong></td>
<td><strong>BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</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>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the first signal source for the command &quot;No quick stop/quick stop (OFF3)&quot;. The following signals are AND'ed: - BI: p0848 &quot;No quick stop / quick stop (OFF3) signal source 1&quot; - BI: p0849 &quot;No quick stop / quick stop (OFF3) signal source 2&quot; For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2). BI: p0848 = 0 signal or BI: p0849 = 0 signal - OFF3 (braking along the OFF3 ramp (p50296), then pulse suppression and switch on inhibit) BI: p0848 = 1 signal and BI: p0849 = 1 signal - No OFF3 (enable is possible) <strong>Caution:</strong> When &quot;master control from PC&quot; is activated, this binector input is ineffective. <strong>Notice:</strong> The parameter may be protected as a result of p0922 or p2079 and cannot be changed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0849[0...n]</strong></td>
<td><strong>BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</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>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the second signal source for the command &quot;No quick stop/quick stop (OFF3)&quot;. The following signals are AND'ed: - BI: p0848 &quot;No quick stop / quick stop (OFF3) signal source 1&quot; - BI: p0849 &quot;No quick stop / quick stop (OFF3) signal source 2&quot; For the PROFIdrive profile, the result of the AND logic operation corresponds to control word 1 bit 2 (STW1.2). BI: p0848 = 0 signal or BI: p0849 = 0 signal - OFF3 (braking along the OFF3 ramp (p50296), then pulse suppression and switch on inhibit) BI: p0848 = 1 signal and BI: p0849 = 1 signal - No OFF3 (enable is possible) <strong>Caution:</strong> When &quot;master control from PC&quot; is activated, this binector input is effective.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p0852[0...n]</strong></td>
<td><strong>BI: Enable operation/inhibit operation / Operation enable</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</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>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for the command &quot;enable operation/inhibit operation&quot;. 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 (inhibit or enable pulses can be enabled).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2.2 List of parameters

#### p0854[0...n]

**BI: Control by PLC/no control by PLC / Master ctrl by PLC**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dyn. index:** CDS, p0170
- **P-Group:** Commands
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** 1

**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 control 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).

#### p0855[0...n]

**BI: Unconditionally release holding brake / Uncond open brake**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dyn. index:** CDS, p0170
- **P-Group:** Commands
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal source for the command "unconditionally open holding brake".

**Dependency:**
Refer to: p0858

**Notice:**
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

**Note:**
The signal via BI: p0855 (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**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned32 / Binary
- **Dyn. index:** CDS, p0170
- **P-Group:** Commands
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** 1

**Description:**
Sets the signal source for the command "enable speed controller" (r0898.12).
0 signal: Set the I component and speed controller output to zero.
1 signal: Enable speed controller.

**Dependency:**
Refer to: r0898

**Note:**
If "enable speed controller" is withdrawn, then an existing brake will be closed.
If "speed controller enable" is withdrawn, the pulses are not suppressed.
## 2 Parameters

### 2.2 List of parameters

#### p0858[0...n] BI: Unconditionally close holding brake / Uncond close brake

<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>DC_CTRL,</td>
<td>Sets the signal source for the command &quot;unconditionally close holding brake&quot;.</td>
<td>T</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 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.

#### r0898.0...14 CO/BO: Control word sequence control / STW seq_ctrl

<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>DC_CTRL,</td>
<td>Display and connector output for the control word of the sequence control.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></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>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>02</td>
<td>OC / OFF3</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>04</td>
<td>Ramp-function generator enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Continue ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Speed setpoint enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Command open brake</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Jog 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Jog 2</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>
<tr>
<td>12</td>
<td>Speed controller enable</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<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...15 CO/BO: Status word sequence control / ZSW seq_ctrl

<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>DC_CTRL,</td>
<td>Displays the status word of the sequence control.</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></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>Rd for switch on</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Operation enabled</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Jog active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>No coasting active</td>
<td>OFF2 inactive</td>
<td>OFF2 active</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>No Quick Stop active</td>
<td>OFF3 inactive</td>
<td>OFF3 active</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Switching on inhibited active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Drive ready</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### Parameters

#### 2.2 List of parameters

**Note:**
Re bits 00, 01, 02, 04, 05, 06, 09:
For PROFINet, these signals are used for status word 1.

**Description:**
Sets the PROFIBUS address for PROFIBUS interface (X126) on the Control Unit. The address can be set as follows:

- Via p0918
  - 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.

**Note:**
Permissible PROFIBUS addresses: 1 ... 126
Address 126 is used for commissioning.
Every PROFIBUS address change only becomes effective after a POWER ON.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0918</td>
<td>PROFIBUS address / PB address</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 1520, 2410</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>126</td>
<td>125</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the PROFIBUS address for PROFIBUS interface (X126) on the Control Unit. The address can be set as follows:

- Via p0918
  - 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.

**Note:**
Permissible PROFIBUS addresses: 1 ... 126
Address 126 is used for commissioning.
Every PROFIBUS address change only becomes effective after a POWER ON.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>p0922</td>
<td>IF1 PROFINet PZD telegram selection / IF1 PZD telegr</td>
<td>Can be changed: C2(1), T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 1520, 2420</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>390</td>
<td>999</td>
<td>999</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the send and receive telegram.

**Value:**
390: SIEMENS telegram 390, PZD-2/2
999: Free telegram configuration with BICO
### 2 Parameters

#### 2.2 List of parameters

**p0922**  
**IF1 PROFIdrive PZD telegram selection / IF1 PZD telegram**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Sets the send and receive telegram.</td>
<td>1: Standard telegram 1, PZD-2/2</td>
<td>For p0922 = 100 ... 199, p2038 is automatically set to 1 and p2038 cannot no longer be changed. This means that for these telegrams, the &quot;SIMODRIVE 611 universal&quot; interface mode is set and cannot be changed. 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.</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td>4: Standard telegram 4, PZD-6/14</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td>20: Standard telegram 20, PZD-2/6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>220: SIEMENS telegram 220, PZD-10/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>352: SIEMENS telegram 352, PZD-6/6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>999: Free telegram configuration with BICO</td>
<td></td>
</tr>
</tbody>
</table>

**r0924[0...1]**  
**ZSW bit pulses enabled / ZSW pulse enable**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Displays the position of the &quot;Pulses enabled&quot; status signal in the PROFIdrive telegram.</td>
<td>[0] = Signal number</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td>[1] = Bit position</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**r0944**  
**CO: Counter for fault buffer changes / Fault buff change**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Displays fault buffer changes. This counter is incremented every time the fault buffer changes.</td>
<td>Used to check whether the fault buffer has been read out consistently.</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109</td>
</tr>
</tbody>
</table>

**r0945[0...63]**  
**Fault code / Fault code**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC,</td>
<td>Displays the numbers of faults that have occurred.</td>
<td>Refer to: r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3120, r3122</td>
<td>The properties of the fault buffer should be taken from the corresponding product documentation.</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

**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

**Fault buffer structure (general principle):**
- r0945[0...63] Fault code / Fault code
  - **Can be changed:** -
  - **Data type:** Unsigned16
  - **P-Group:** Messages
  - **Not for motor type:** -
  - **Min**
  - **Max**
  - **Calculated:** -
  - **Dyn. index:** -
  - **Unit group:** -
  - **Scaling:** -
  - **Expert list:** 1
  - **Access level:** 2
  - **Func. diagram:** 8050, 8060
  - **Unit selection:** -
  - **Factory setting**

**Description:**
Displays the numbers of faults that have occurred.

**Dependency:**
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

**r0946[0...65534] Fault code list / Fault code list**
- **Can be changed:** -
- **Data type:** Signed16
- **P-Group:** Messages
- **Not for motor type:** -
- **Min**
- **Max**
- **Calculated:** -
- **Dyn. index:** -
- **Unit group:** -
- **Scaling:** -
- **Expert list:** 0
- **Access level:** 3
- **Func. diagram:** -
- **Unit selection:** -
- **Factory setting**

**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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Function</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0946[0...65534]</td>
<td>Fault code list / Fault code list</td>
<td>3</td>
<td>Lists the fault codes stored in the drive unit. The indices can only be accessed with a valid fault code.</td>
</tr>
<tr>
<td>r0947[0...63]</td>
<td>Fault number / Fault number</td>
<td>3</td>
<td>This parameter is identical to r0945.</td>
</tr>
<tr>
<td>r0948[0...63]</td>
<td>Fault time received in milliseconds / t_fault recv ms</td>
<td>3</td>
<td>Displays the system runtime in milliseconds when the fault occurred.</td>
</tr>
</tbody>
</table>

#### Parameters Table

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Access level</th>
<th>Notice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r0946[0...65534]</td>
<td>Unsigned16</td>
<td>-</td>
<td>8060</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td></td>
<td>Lists the fault codes stored in the drive unit. The indices can only be accessed with a valid fault code.</td>
</tr>
<tr>
<td>r0947[0...63]</td>
<td>Unsigned16</td>
<td>-</td>
<td>8050, 8060</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td></td>
<td>This parameter is identical to r0945.</td>
</tr>
<tr>
<td>r0948[0...63]</td>
<td>Unsigned32</td>
<td>-</td>
<td>8050, 8060</td>
<td>Messages</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td></td>
<td>Displays the system runtime in milliseconds when the fault occurred.</td>
</tr>
</tbody>
</table>

**Dependency:**

- The parameter assigned to the fault code is entered in r0951 under the same index.

**Notice:**

- The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

**Note:**

- The time comprises r2130 (days) and r0948 (milliseconds).

**Notice:**

- The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

**Notice:**

- The structure of the fault buffer and the assignment of the indices is shown in r0945.

When the parameter is read via PROFIdrive, the TimeDifference data type applies.
### 2.2 List of parameters

**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 PROFIdrive, the TimeDifference data type applies.

#### r0949[0...63] Fault value / Fault value

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Integer32  
**P-Group:** Messages  
**Not for motor type:** -  
Min:  
Max:  
**Dependency:** Displays additional information about the fault that occurred (as integer number).  
**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>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** Messages  
**Not for motor type:** -  
Min: 65535  
Max: 0  
**Dependency:** The fault buffer is deleted (cleared) by setting p0952 to 0.  
**Note:** The structure of the fault buffer and the assignment of the indices is shown in r0945.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r0963</strong></td>
<td>PROFIBUS baud rate / PB baud rate</td>
<td>Displays the corresponding value for the PROFIBUS baud rate.</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: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit 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></td>
</tr>
<tr>
<td>0</td>
<td>255</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

| **r0964[0...6]** | Device identification / Device ident | Displays the device identification. | | |
| | Can be changed: - | Calculated: - | Access level: 2 |
| | Data type: Unsigned16 | Dyn. index: - | Func. diagram: - |
| | P-Group: Communications | Unit group: - | Unit selection: - |
| | Not for motor type: - | Scaling: - | Expert list: 1 |
| | Min | Max | Factory setting |
| - | - | - | |

| **r0965** | PROFldrive profile number / PD profile number | Displays the PROFldrive profile number and profile version. | | |
| | Can be changed: - | Calculated: - | Access level: 3 |
| | Data type: Unsigned16 | Dyn. index: - | Func. diagram: - |
| | P-Group: Communications | Unit group: - | Unit selection: - |
| | Not for motor type: - | Scaling: - | Expert list: 1 |
| | Min | Max | Factory setting |
| - | - | - | |
### 2 Parameters

#### 2.2 List of parameters

**p0969** System runtime relative / t_System relative

<table>
<thead>
<tr>
<th>Variable</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32

**P-Group:** Displays, signals

**Not for motor type:** -

**Unit group:** -

**Min:** 0 [ms]

**Max:** 4294967295 [ms]

**Expert list:** 1

**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 Octet String 2 data type applies.

**p0970** TM150 reset parameters / TM150 par reset

<table>
<thead>
<tr>
<th>Variable</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM150</td>
<td>C2(30)</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**P-Group:** Factory settings

**Not for motor type:** -

**Unit group:** -

**Min:** 0

**Max:** 100

**Expert list:** 1

**Factory setting:** 0

**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.

**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** TM15DI/DO reset parameter / TM15D par reset

<table>
<thead>
<tr>
<th>Variable</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM15DI_DO</td>
<td>C2(30)</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**P-Group:** Factory settings

**Not for motor type:** -

**Unit group:** -

**Min:** 0

**Max:** 100

**Expert list:** 1

**Factory setting:** 0

**Description:** The parameter is used to initiate a reset of the parameters on Terminal Module 15 (TM15).

**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.

**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.
2 Parameters

2.2 List of parameters

### p0970  TM31 reset parameters / TM31 par reset

**TM31**

- **Can be changed:** C2(30)
- **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 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
- 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.

### p0971  Save drive object parameters / Drv_obj par save

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** Factory settings
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Setting to save the parameter of the particular drive object in the non-volatile memory.
When saving, only the adjustable parameters intended to be saved are taken into account.

**Value:**
- 0: Inactive
- 1: Save drive object

**Dependency:**
Refer to: p0977, r3996

**Caution:**
If a memory card (optional) is inserted, the following applies:
The parameters are also saved on the card and therefore overwrite any existing data!

**Notice:**
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).
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.

### p0971  Save drive object parameters / Drv_obj par save

**TM150, TM15DI_DO, TM31**

- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** Factory settings
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Setting to save the parameter of the particular drive object in the non-volatile memory.
When saving, only the adjustable parameters intended to be saved are taken into account.
2 Parameters

2.2 List of parameters

**p0972 Drive unit reset / Drv_unit reset**

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Inactive</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Hardware-Reset immediate</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Hardware reset preparation</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Hardware reset after cyclic communication has failed</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** -  
**Unit group:** -  
**Min:** 0  
**Max:** 3  
**Factory setting:** 0

**Dependency:**
Refer to: p0977, r3996

**Notice:**
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).
Writing to parameters is inhibited while saving.
The progress while saving is displayed in r3996.

**Notice:**
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).
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.

**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 PROFIdrive interfaces, then the reset is executed after completing both cyclic 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.
### 2.2 List of parameters

#### r0975[0...10] Drive object identification / DO identification

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31**

**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] = PROFIdrive drive object type class
- [6] = PROFIdrive 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 --> PROFIdrive drive object, type class
  - r0975[6] = 9 --> PROFIdrive drive object sub-type class 1
  - r0975[7] = 2 --> drive object number = 2
  - r0975[8] = 0 (reserved)
  - r0975[9] = 0 (reserved)
  - r0975[10] = 600 --> second part, firmware version (complete version: V01.02.06.00)

---

#### r0975[0...10] Drive object identification / DO identification

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

**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] = PROFIdrive drive object type class
- [6] = PROFIdrive 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] = 17 --> DC_CTRL drive object type
  - r0975[2] = 102 --> first part, firmware version V01.02 (second part, refer to index 10)
2 Parameters

2.2 List of parameters

p0976
Reset and load all parameters / Reset load all par

| 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 |
| | 100: Start resetting of all BICO interconnections |
| | 200: Start deleting all user data |
| | 1011: Start download of param. saved in volatile mem w/ p0976=1011 |
| | 1012: Start download of param. saved in volatile mem w/ p0976=1012 |
| | 1013: Start download of param. saved in volatile mem w/ p0976=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. After executing p0976 = 200, the Control Unit is powered on automatically. |
| Note: | After all of the parameters have been reset to their factory setting, the system must be commissioned for the first time again. Resetting or loading is realized in the non-volatile memory. |
| | 2. Set p0976 to "required value". The system is rebooted. p0976 is automatically set to 0 after execution. |

p0977
Save all parameters / Save all par

| Description: | Saves all parameters of the drive system to the non-volatile memory. When saving, only the adjustable parameters intended to be saved are taken into account. |
| 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) |
| | 80: Save in non-volatile memory time-optimized (reserved) |
| | 1011: Save in volatile memory, downloaded with p0976=1011 |
2 Parameters

2.2 List of parameters

1012: Save in volatile memory, downloaded with p0976=1012
1013: Save in volatile memory, downloaded with p0976=1013

Dependency:
Refer to: p0976, r996

Caution:
Memory card inserted:
The drive parameterization is also saved on the card. Any backed-up data is overwritten!

Notice:
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).
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.
Identification and maintenance data (I&M data, p8806 and following) are only saved for p0977 = 1.

<table>
<thead>
<tr>
<th>p0978[0...n]</th>
<th>List of drive objects / List of the DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1(1)</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>0</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>[0] 1</td>
</tr>
<tr>
<td></td>
<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).

<table>
<thead>
<tr>
<th>r0979[0...30]</th>
<th>PROFIdrive encoder format / PD encoder format</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Func. diagram: 4704</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

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 revolutions 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
2 Parameters

2.2 List of parameters

[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

r0980[0...299] List of existing parameters 1 / List avail par 1
All objects Can be changed: - Calculated: - Access level: 4
Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 0
Min Max Factory setting

Description: Displays the parameters that exist for this drive.
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
Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 0
Min Max Factory setting

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
Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 0
Min Max Factory setting

Description: Displays the parameters that exist for this drive.
Dependency: Refer to: r0980, r0981
2 Parameters

2.2 List of parameters

Note: The existing parameters are displayed in indices 0 to 298. If an index contains the value 0, then the list ends here.

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

<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>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 0</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).

r0991[0...99]

List of modified parameters 2 / List chang par 2

<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>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 0</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: 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

<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>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 0</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: r0990, r0991

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).
### 2.2 List of parameters

#### p1000[0...n]
**Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set**

<table>
<thead>
<tr>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runs the corresponding macro files.</td>
<td>C2(1), T</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

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

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

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

**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

#### p1035[0...n]
**BI: Motorized potentiometer setpoint raise / Mop raise**

<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 continually increase the setpoint for the motorized potentiometer.</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

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.

#### p1036[0...n]
**BI: Motorized potentiometer lower setpoint / Mop lower**

<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 continuously lower the setpoint for the motorized potentiometer.</td>
<td>T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

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.
2 Parameters

2.2 List of parameters

---

**p1055[0...n]**

**BI: Jog bit 0 / Jog bit 0**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Access level:** 3
- **Func. diagram:** 2580

**Description:** Sets the signal source for jog 1.

**Recommendation:** 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: p0840

**Notice:** The drive is enabled for jogging using BI: p1055 or BI: p1056. The command "ON/OFF1" 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.

---

**p1056[0...n]**

**BI: Jog bit 1 / Jog bit 1**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Access level:** 3
- **Func. diagram:** 2580

**Description:** Sets the signal source for jog 2.

**Recommendation:** 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: p0840

**Notice:** The drive is enabled for jogging using BI: p1055 or BI: p1056. The command "ON/OFF1" 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.

---

**p1070[0...n]**

**CI: Main setpoint / Main setpoint**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Access level:** 3
- **Func. diagram:** 3113

**Description:** Sets the signal source for the main setpoint.

**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**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Calculated:** -
- **Access level:** 3
- **Func. diagram:** 2442, 3113

**Description:** Sets the signal source to invert the setpoint.

**Notice:** The parameter may be protected as a result of p0922 or p2079 and cannot be changed.
### Parameters

#### p1140[0...n]

**BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 2580</td>
<td></td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Unit 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:**
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).

**Dependency:**
Refer to: p1140, p1142

**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.

#### p1141[0...n]

**BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 2580</td>
<td></td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Unit 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:**
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).

**Dependency:**
Refer to: p1140, p1142

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

⚠️

#### p1142[0...n]

**BI: Enable setpoint/inhibit setpoint / Setpoint enable**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 2580</td>
<td></td>
</tr>
<tr>
<td>P-Group: Setpoints</td>
<td>Unit 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:**
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).

**Dependency:**
Refer to: p1140, p1141

**Caution:**
When "master control from PC" is activated, this binector input is ineffective.

⚠️
### 2 Parameters

#### 2.2 List of parameters

**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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r1407.0...23</td>
<td><strong>CO/BO: Status word speed controller / ZSW n_ctrl</strong></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Closed-loop control</td>
<td>Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: REL</td>
<td>Scaling: - Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>00</td>
<td>U/f control active</td>
</tr>
<tr>
<td>01</td>
<td>Encoderless operation active</td>
</tr>
<tr>
<td>02</td>
<td>Torque control active</td>
</tr>
<tr>
<td>03</td>
<td>Speed control active</td>
</tr>
<tr>
<td>05</td>
<td>Speed controller I component frozen</td>
</tr>
<tr>
<td>06</td>
<td>Speed controller I component set</td>
</tr>
<tr>
<td>07</td>
<td>Torque limit reached</td>
</tr>
<tr>
<td>08</td>
<td>Upper torque limit active</td>
</tr>
<tr>
<td>09</td>
<td>Lower torque limit active</td>
</tr>
<tr>
<td>10</td>
<td>Droop enabled</td>
</tr>
<tr>
<td>11</td>
<td>Speed setpoint limited</td>
</tr>
<tr>
<td>12</td>
<td>Ramp-function generator set</td>
</tr>
<tr>
<td>13</td>
<td>Encoderless operation due to a fault</td>
</tr>
<tr>
<td>14</td>
<td>I/f control active</td>
</tr>
<tr>
<td>15</td>
<td>Torque limit reached (without pre-control)</td>
</tr>
<tr>
<td>23</td>
<td>Acceleration model activated</td>
</tr>
</tbody>
</table>

**p1441[0...n]**  
**Actual speed smoothing time / n_act T_smooth**

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: U, T Calculated: CALC_MOD_CON Access level: 3 |
| Data type: FloatingPoint32 | Dyn. index: DDS, p0180 Func. diagram: 4711 |
| P-Group: Closed-loop control | Unit group: - Unit selection: - |
| Not for motor type: REL | Scaling: - Expert list: 1 |
| Min | Max | Factory setting |
| 0.00 [ms] | 50.00 [ms] | 0.00 [ms] |

**Description:**
Sets the smoothing time constant (PT1) for the speed actual value.

**Dependency:**
Refer to: r0063

**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 adjusted and/or the speed controller settings Kp (r50219) and Tn (r50218) checked.

**p1500[0...n]**  
**Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set**

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(1), T Calculated: - Access level: 1 |
| Data type: Unsigned32 | Dyn. index: CDS, p0170 Func. diagram: - |
| P-Group: Commands | Unit group: - Unit selection: - |
| Not for motor type: REL | Scaling: - Expert list: 1 |
| Min | Max | Factory setting |
| 0 | 999999 | 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.
2 Parameters

2.2 List of parameters

Example:
p1500 = 6 --> the macro file PM000006.ACX is run.

Dependency:
Refer to: p0015, p0700, p1000, r8573

Notice:
No errors were issued during quick commissioning (p3900 = 1) when writing to parameters of the QUICK_IBN group!
When executing a specific macro, the corresponding programmed settings are made and become active.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p1821[0...n]</td>
<td>Dir of rot / Dir of rot</td>
<td>Can be changed: C2(1, 4)</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dyn. index: DDS, p0180</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Encoder</td>
<td>Unit 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</td>
<td>Max 1</td>
<td>Factory setting 0</td>
</tr>
<tr>
<td></td>
<td>Description: Setting to change the direction of rotation. Changing the parameter reverses the direction of the encoder actual value.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value: 0: CW</td>
<td>1: CCW</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2000</td>
<td>Reference speed / n_ref</td>
<td>Can be changed: T</td>
<td>Calculated: CALC_MOD_ALL</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit 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 6.00 [rpm]</td>
<td>Max 210000.00 [rpm]</td>
<td>Factory setting 210000.00 [rpm]</td>
</tr>
<tr>
<td></td>
<td>Description: Sets the reference quantity for speed. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2001</td>
<td>Reference voltage / Reference voltage</td>
<td>Can be changed: T</td>
<td>Calculated: CALC_MOD_ALL</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit 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 10 [Vrms]</td>
<td>Max 100000 [Vrms]</td>
<td>Factory setting 1000 [Vrms]</td>
</tr>
<tr>
<td></td>
<td>Description: Sets the reference quantity for voltages. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: For the automatic calculation (p0340 = 1, p3900 &gt; 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.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2002</td>
<td>Reference current / $I_{ref}$</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>0.10 [Arms]</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>100000.00 [Arms]</td>
<td>Factory setting 100.00 [Arms]</td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
</tr>
</tbody>
</table>

### p2003 Reference torque / $M_{ref}$

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: T |
| DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Data type: FloatingPoint32 |
| Data type: FloatingPoint32 | Dyn. index: - |
| P-Group: Communications | Unit group: 7_2 |
| Not for motor type: - | Unit selection: p0505 |
| Min | Scaling: - |
| 0.01 [Nm] | Expert list: 1 |
| 20000000.00 [Nm] | Factory setting 1.00 [Nm] |
| Access level: 3 | |

### r2004 Reference power / $P_{ref}$

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: - |
| DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Data type: FloatingPoint32 |
| Data type: FloatingPoint32 | Dyn. index: - |
| P-Group: Communications | Unit group: 14_10 |
| Not for motor type: - | Unit selection: p0505 |
| Min | Scaling: - |
| - [kW] | Expert list: 1 |
| - [kW] | Factory setting - [kW] |
| Access level: 3 | |

### p2005 Reference angle / Reference angle

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: T |
| DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Data type: FloatingPoint32 |
| Data type: FloatingPoint32 | Dyn. index: - |
| P-Group: Communications | Unit group: - |
| Not for motor type: - | Unit selection: - |
| Min | Scaling: - |
| 90.00 [''] | Expert list: 1 |
| 180.00 [''] | Factory setting 90.00 [''] |
| Access level: 3 | |

**Description:**
- Sets the reference quantity for current.
- The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**Dependency:**
- This value is calculated as follows:
  - 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:
  - $-2 \times \pi \times \text{reference speed} / 60 \times \text{reference torque (motor)}$

**Description:**
- Sets the reference quantity for angle.
- The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).
### 2 Parameters

#### 2.2 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]
- **Expert list:** 1
- **Factory setting:** 100.00 [°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]
- **Expert list:** 1
- **Factory setting:** 0.01 [rev/s²]

**Description:**

Sets the reference quantity for acceleration.

The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word).

**p2011**

**Comm IF address / Comm add**

- **Can be changed:** T
- **Data type:** Unsigned16
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 1
- **Max:** 127
- **Factory setting:** 5

**Description:**

Sets the address for the commissioning interface (PPI).

**Note:**

- Only odd-numbered addresses can be set.
- Changes only become effective after POWER ON.
- The parameter is not influenced by setting the factory setting.

**p2011**

**Comm IF address / Comm add**

- **Can be changed:** T
- **Data type:** Unsigned16
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** 1
- **Max:** 127
- **Factory setting:** 3

**Description:**

Sets the address for the commissioning interface (PPI).

**Note:**

- Only odd-numbered addresses can be set.
- Changes only become effective after POWER ON.
- The parameter is not influenced by setting the factory setting.
2 Parameters
2.2 List of parameters

### r2019[0...7] Comm IF error statistics / Comm err

<table>
<thead>
<tr>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the receive errors at the commissioning interface (RS232).</td>
<td></td>
</tr>
</tbody>
</table>

| [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       |

<table>
<thead>
<tr>
<th>Parameter</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>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. index:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fieldbus IF:</th>
<th>Fieldbus interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fieldbus interface</td>
<td></td>
</tr>
</tbody>
</table>

**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.

### p2020 Field bus interface baud rate / Field bus baud

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Parameter</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>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. index:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>13</td>
</tr>
</tbody>
</table>

**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.

### p2021 Field bus interface address / Field bus address

<table>
<thead>
<tr>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the address for the fieldbus interface USS.</td>
<td>Refer to: p2030</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</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>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. index:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>31</td>
</tr>
</tbody>
</table>

**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.
## 2 Parameters

### 2.2 List of parameters

#### p2022
**Field bus int USS PZD no. / Field bus USS PZD**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factor setting</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0, 16, 2</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**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>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factor setting</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0, 127, 127</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:**
Sets the number of 16-bit words in the PKW part of the USS telegram for the field bus interface.

**Value:**
- PKW 0 words
- PKW 3 words
- PKW 4 words
- PKW variable

**Dependency:**
Refer to: p2030

**Note:**
The parameter is not influenced by setting the factory setting.

#### p2029[0...7]
**Field bus int error statistics / Field bus error**

<table>
<thead>
<tr>
<th>Parameter</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>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factor setting</td>
<td></td>
</tr>
<tr>
<td>Index</td>
<td>0...7</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**
Displays the receive errors on the field bus interface (USS).

**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

#### p2030
**Field bus int protocol selection / Field bus protocol**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list:</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factor setting</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0, 3</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the communication protocol for the field bus interface.

**Value:**
- No protocol
- USS
- PROFIBUS
2 Parameters
2.2 List of parameters

Note: Changes only become effective after POWER ON.
The parameter is not influenced by setting the factory setting.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Notice</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2032</td>
<td>Master control control word effective / PcCtrl STW eff</td>
<td>Displays the effective control word 1 (STW1) of the drive for the master control.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Displays, signals</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>
<tr>
<td>Notice:</td>
<td>The master control only influences control word 1 and speed setpoint 1. Other control words/setpoints can be transferred from another automation device.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Bit field</th>
<th>Notice</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2035</td>
<td>Fieldbus interface USS PIV drive object number / Fieldbus USS DO_no</td>
<td>Sets the drive object number for communication via the field bus interface (USS).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</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>
<tr>
<td>Notice:</td>
<td>The parameter is available globally on all drive objects. 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>Bit field</th>
<th>Notice</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2037</td>
<td>IF1 PROFIdrive STW1.10 = 0 mode / IF1 PD STW1.10=0</td>
<td>Sets the processing mode for PROFIdrive STW1.10 &quot;master control by PLC&quot;. Generally, control word 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>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</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>
<tr>
<td>Notice:</td>
<td>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>Value</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2032</td>
<td></td>
<td>Do not change the setting p2037 = 0.</td>
</tr>
<tr>
<td>p2035</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2037</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Note:
If the STW1 is not transferred according to the PROFIdrive with PZD1 (with bit 10 "master control by PLC"), then p2037 should be set to 2.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2038</td>
<td>IF1 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode</td>
<td>Can be changed: T, Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: Integer16, Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications, Not for motor type: -</td>
<td>Unit group: -, Unit selection: -</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>2</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the interface mode of the PROFIdrive control words and status words.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</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>Dependency:</td>
<td>Refer to: p0922, p2079</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>
<tr>
<td>p2039</td>
<td>Select debug monitor interface / Debug monit select</td>
<td>Can be changed: U, T, Calculated: -</td>
<td>Access level: 4</td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Data type: Unsigned16, Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications, Not for motor type: -</td>
<td>Unit group: -, Unit selection: -</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>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the serial interface for the debug monitor.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>With p2039 = 1, the serial interface COM2 (X179) is set. Other values are not permitted.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2040</td>
<td>Fieldbus interface monitoring time / Fieldbus t_monit</td>
<td>Can be changed: U, T, Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Data type: FloatingPoint32, Dyn. index: -</td>
<td>Func. diagram: 9310</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications, Not for motor type: -</td>
<td>Unit group: -, Unit selection: -</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 [ms]</td>
<td>1999999 [ms]</td>
<td>100 [ms]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the monitoring time to monitor the process data received via the fieldbus interface.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>If no process data is received within this time, then an appropriate message is output.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2040 = 0; Monitoring is de-activated.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p2042</td>
<td>PROFIBUS Ident Number / PB Ident No.</td>
<td>Can be changed: T, Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Data type: Integer16, Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications, Not for motor type: -</td>
<td>Unit group: -, Unit selection: -</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>Description:</td>
<td>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).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>SINAMICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: VIK-NAMUR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>Every change only becomes effective after a POWER ON.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

r2043.0...2  BO: IF1 PROFl drive PZD state / IF1 PD PZD state

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned8  Dyn. index: -  Func. diagram: -
P-Group: Communications  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

Description: Displays the PROFI drive PZD state.

Dependency: Refer to: p2044
Note: When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

p2044  IF1 PROFI drive fault delay / IF1 PD fault delay

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

Can be changed: U, T  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: 2410
P-Group: Communications  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

Description: 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).

Dependency: Refer to: r2043

p2047  PROFIBUS additional monitoring time / PB supply t_monit

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

Can be changed: U, T  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: 2410
P-Group: Communications  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

Description: Sets the additional monitoring time to monitor the process data received via PROFIBUS.
Enables short bus faults to be compensated.
If no process data is received within this time, then an appropriate message is output.
Recommendation: In the isochronous mode, the additional monitoring time should not be set.
Note: For controller STOP, the additional monitoring time is not effective.

p2048  IF1 PROFI drive PZD sampling time / IF1 PZD t_sample

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

Can be changed: C1(3)  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: -
P-Group: Communications  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting

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).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Scalling</th>
<th>Function diagram</th>
<th>P-Group</th>
<th>Unit selection</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Expert level</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2050[0...19]</td>
<td>CO: IF1 PROFldrive PZD receive word / IF1 PZD recv word</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Integer16</td>
<td>-</td>
<td>Communications</td>
<td>-</td>
<td>4000H</td>
<td>2440</td>
<td>Communications</td>
<td>-</td>
<td>4000H</td>
<td>-</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
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<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
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<tr>
<td>r2050[0...63]</td>
<td>CO: IF1 PROFldrive PZD receive word / IF1 PZD recv word</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Integer16</td>
<td>-</td>
<td>Communications</td>
<td>-</td>
<td>4000H</td>
<td>2440</td>
<td>Communications</td>
<td>-</td>
<td>4000H</td>
<td>-</td>
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<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
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<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
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</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

- [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
- [32] = PZD 33
- [33] = PZD 34
- [34] = PZD 35
- [35] = PZD 36
- [36] = PZD 37
- [37] = PZD 38
- [38] = PZD 39
- [39] = PZD 40
- [40] = PZD 41
- [41] = PZD 42
- [42] = PZD 43
- [43] = PZD 44
- [44] = PZD 45
- [45] = PZD 46
- [46] = PZD 47
- [47] = PZD 48
- [48] = PZD 49
- [49] = PZD 50
- [50] = PZD 51
- [51] = PZD 52
- [52] = PZD 53
- [53] = PZD 54
- [54] = PZD 55
- [55] = PZD 56
- [56] = PZD 57
- [57] = PZD 58
- [58] = PZD 59
- [59] = PZD 60
- [60] = PZD 61
- [61] = PZD 62
- [62] = PZD 63
- [63] = PZD 64

Dependency: 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

r2050[0...4] CO: IF1 PROFIdrive PZD receive word / IF1 PZD recv word

Can be changed: - Calculated: - Access level: 3
Data type: Integer16 Dyn. index: - Func. diagram: -
P-Group: Communications Unit 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 fieldbus controller.

Index:
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

Note: IF1: Interface 1
2 Parameters

2.2 List of parameters

**p2051[0...24]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
</table>

**p2051[0...63]**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
</table>
2 Parameters
2.2 List of parameters

[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
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36
[36] = PZD 37
[37] = PZD 38
[38] = PZD 39
[39] = PZD 40
[40] = PZD 41
[41] = PZD 42
[42] = PZD 43
[43] = PZD 44
[44] = PZD 45
[45] = PZD 46
[46] = PZD 47
[47] = PZD 48
[48] = PZD 49
[49] = PZD 50
[50] = PZD 51
[51] = PZD 52
[52] = PZD 53
[53] = PZD 54
[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

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]

<table>
<thead>
<tr>
<th>CI: IF1 PROFIdrive PZD send word / IF1 PZD send word</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM15DI_DO, TM31</strong></td>
</tr>
</tbody>
</table>

- **Data type:** Unsigned32 / Integer16
- **P-Group:** Communications
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Factory setting:** 0

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 3
- **Dyn. index:** -
- **Func. diagram:** -
- **Unit group:** -
- **Unit selection:** -
- **Scaling:** 4000H
- **Expert list:** 1

**Description:**
Selects the PZD (actual values) with word format to be sent to the fieldbus controller.
### 2.2 List of parameters

**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

---

**r2053[0...24]**

**IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word**

<table>
<thead>
<tr>
<th>CU_DC</th>
<th>CU_DC_R</th>
<th>CU_DC_R_S</th>
<th>CU_DC_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Communications</td>
<td>Unit 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>1</td>
</tr>
</tbody>
</table>

**Description:** Displays the PZD (actual values) with word format sent to the fieldbus 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
- [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>
<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>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
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<td>07</td>
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<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>
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<tr>
<td>12</td>
<td>Bit 12</td>
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<td>13</td>
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<td>14</td>
<td>Bit 14</td>
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</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
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<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** IF1: Interface 1
**2 Parameters**

2.2 List of parameters

<table>
<thead>
<tr>
<th>r2053[0...63]</th>
<th>IF1 PROFinet drive diagnostics PZD send word / IF1 diag send word</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the PZD (actual values) with word format sent to the fieldbus controller.</td>
</tr>
<tr>
<td><strong>Index:</strong></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>
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<tr>
<td>[3] = PZD 4</td>
<td></td>
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<tr>
<td>[5] = PZD 6</td>
<td></td>
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<tr>
<td>[6] = PZD 7</td>
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<tr>
<td>[7] = PZD 8</td>
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<tr>
<td>[8] = PZD 9</td>
<td></td>
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<tr>
<td>[9] = PZD 10</td>
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<tr>
<td>[10] = PZD 11</td>
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<tr>
<td>[12] = PZD 13</td>
<td></td>
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<tr>
<td>[13] = PZD 14</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>
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<tr>
<td>[18] = PZD 19</td>
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<td>[19] = PZD 20</td>
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<td>[20] = PZD 21</td>
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<td>[24] = PZD 25</td>
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<td>[26] = PZD 27</td>
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<td>[27] = PZD 28</td>
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<td>[28] = PZD 29</td>
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<td>[29] = PZD 30</td>
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<td>[35] = PZD 36</td>
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<td>[37] = PZD 38</td>
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<td>[41] = PZD 42</td>
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<td>[45] = PZD 46</td>
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<tr>
<td>[46] = PZD 47</td>
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<tr>
<td>[47] = PZD 48</td>
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<td>[48] = PZD 49</td>
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<td>[49] = PZD 50</td>
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<td>[50] = PZD 51</td>
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<tr>
<td>[51] = PZD 52</td>
<td></td>
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<tr>
<td>[52] = PZD 53</td>
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</tr>
<tr>
<td>[53] = PZD 54</td>
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</tr>
</tbody>
</table>

DC_CTRL,
DC_CTRL_R,
DC_CTRL_R_S,
DC_CTRL_S

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

Data type: Unsinged16
Dyn. index: -
Func. diagram: 2450, 2470

P-Group: Communications
Unit group: -
Unit selection: -

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

Min -
Max -
Factory setting -

Data type: Unsigned16
Dyn. index: -
Func. diagram: 2450, 2470

P-Group: Communications
Unit group: -
Unit selection: -

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

Min -
Max -
Factory setting -

DC_CTRL,
DC_CTRL_R,
DC_CTRL_R_S,
DC_CTRL_S

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

Data type: Unsinged16
Dyn. index: -
Func. diagram: 2450, 2470

P-Group: Communications
Unit group: -
Unit selection: -

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

Min -
Max -
Factory setting -
2 Parameters

2.2 List of parameters

- [54] = PZD 55
- [55] = PZD 56
- [56] = PZD 57
- [57] = PZD 58
- [58] = PZD 59
- [59] = PZD 60
- [60] = PZD 61
- [61] = PZD 62
- [62] = PZD 63
- [63] = PZD 64

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 | -

Dependency: Refer to: p2051, p2061
Note: IF1: Interface 1

r2053[0...4] IF1 PROFIdrive diagnostics PZD send word / IF1 diag send word

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

Data type: Unsigned16
Dyn. index: -
Func. diagram: -
P-Group: Communications
Unit 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 fieldbus 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
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2054</td>
<td>PROFIBUS status / PB status</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Func. diagram: 2410</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4</td>
<td>-</td>
</tr>
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<td>r2055[0...2]</td>
<td>PROFIBUS diagnostics standard / PB diag standard</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Func. diagram: 2410</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r2060[0...62]</td>
<td>CO: IF1 PROFIdrive PZD receive double word / IF1 PZD recv DW</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<td>Data type: Integer32</td>
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<td>Access level: 3</td>
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<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Func. diagram: 2440, 2460</td>
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<tr>
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<td>Not for motor type: -</td>
<td>Scaling: 4000H</td>
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<tr>
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<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
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</tr>
</tbody>
</table>

**Description:**
- **r2054**
  - **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:**
    - 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.
      - Only for clock-cycle synchronous operation, the following applies:
        - The drive is not in synchronism as the global control (GC) has an error.
    - In 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.

**Description:**
- **r2055[0...2]**
  - **Diagnostics display for the PROFIBUS interface.**
  - **Index:**
    - [0] = Master bus address
    - [1] = Master input total length bytes
    - [2] = Master output total length bytes

**Description:**
- **r2060[0...62]**
  - **Connector output to interconnect PZD (setpoints) with double word format received from the fieldbus 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
2 Parameters

2.2 List of parameters

[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
[31] = PZD 32 + 33
[32] = PZD 33 + 34
[33] = PZD 34 + 35
[34] = PZD 35 + 36
[35] = PZD 36 + 37
[36] = PZD 37 + 38
[37] = PZD 38 + 39
[38] = PZD 39 + 40
[39] = PZD 40 + 41
[40] = PZD 41 + 42
[41] = PZD 42 + 43
[42] = PZD 43 + 44
[43] = PZD 44 + 45
[44] = PZD 45 + 46
[45] = PZD 46 + 47
[46] = PZD 47 + 48
[47] = PZD 48 + 49
[48] = PZD 49 + 50
[49] = PZD 50 + 51
[50] = PZD 51 + 52
[51] = PZD 52 + 53
[52] = PZD 53 + 54
[53] = PZD 54 + 55
[54] = PZD 55 + 56
[55] = PZD 56 + 57
[56] = PZD 57 + 58
[57] = PZD 58 + 59
[58] = PZD 59 + 60
[59] = PZD 60 + 61
[60] = PZD 61 + 62
[61] = PZD 62 + 63
[62] = PZD 63 + 64

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
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2061[0...62]</td>
<td>CI: PROFIdrive PZD send double word / IF1 PZD send DW</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
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<td>Dyn. index: -</td>
<td>Func. diagram: 2450, 2470</td>
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<td>Not for motor type: -</td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>Min</td>
<td>Max</td>
<td>Scaling: 4000H</td>
<td>Expert list: 1</td>
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<td></td>
<td>calculated value</td>
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<td>[0] = PZD 1 + 2</td>
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<td>[4] = PZD 5 + 6</td>
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<td>[6] = PZD 7 + 8</td>
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<td>[8] = PZD 9 + 10</td>
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<td>[9] = PZD 10 + 11</td>
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<tr>
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<tr>
<td>[13] = PZD 14 + 15</td>
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<td>[17] = PZD 18 + 19</td>
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<td>[18] = PZD 19 + 20</td>
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<td>[20] = PZD 21 + 22</td>
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<td>[21] = PZD 22 + 23</td>
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<tr>
<td>[25] = PZD 26 + 27</td>
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<tr>
<td>[50] = PZD 51 + 52</td>
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<td>[51] = PZD 52 + 53</td>
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<tr>
<td>[52] = PZD 53 + 54</td>
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<tr>
<td>[53] = PZD 54 + 55</td>
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</tr>
</tbody>
</table>

**Description:**
Selects the PZD (actual values) with double word format to be sent to the fieldbus controller.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Dyndex:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[54] PZD 55 + 56</td>
<td>IF1 PROFIdrive diagnostics PZD send double word / IF1 diag send DW</td>
<td>[0...62]</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>2450, 2470</td>
<td>Communications</td>
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<td>[55] PZD 56 + 57</td>
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<td>[62] PZD 63 + 64</td>
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</tbody>
</table>

Dependency: Refer to: p2051

Notice: A BICO interconnection for a single PZD can only take place either on p2051 or p2061.
The parameter may be protected as a result of p0922 or p2079 and cannot be changed.

Note: IF1: Interface 1

Description: Displays the PZD (actual values) with double word format sent to the fieldbus 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
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- [33] = PZD 34 + 35
- [34] = PZD 35 + 36
- [35] = PZD 36 + 37
- [36] = PZD 37 + 38
- [37] = PZD 38 + 39
- [38] = PZD 39 + 40
- [39] = PZD 40 + 41
2 Parameters

2.2 List of parameters

[40] = PZD 41 + 42
[41] = PZD 42 + 43
[42] = PZD 43 + 44
[43] = PZD 44 + 45
[44] = PZD 45 + 46
[45] = PZD 46 + 47
[46] = PZD 47 + 48
[47] = PZD 48 + 49
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[62] = PZD 63 + 64

<table>
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<th>1 signal</th>
<th>0 signal</th>
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<td>Bit 31</td>
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</table>

Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF1: Interface 1
### 2 Parameters

#### 2.2 List of parameters

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<tbody>
<tr>
<td>r2064[0...7]</td>
<td>PB/PN diagnostics clock cycle synchronism / PB/PN diag clock</td>
<td>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.</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
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<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Index:</td>
<td></td>
<td></td>
<td></td>
<td>[0] = Clock synchronous mode activated</td>
<td></td>
<td></td>
<td>[1] = Bus cycle time (Tdp) [µs]</td>
<td></td>
<td></td>
<td>[2] = Master cycle time (Tmapc) [µs]</td>
<td></td>
<td></td>
<td>[3] = Instant of actual value acquisition (Ti) [µs]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r2065</td>
<td>PB/PN controller sign of life diagnostics / PB/PN ctr SoL diag</td>
<td>Displays how often the sign-of-life from the clock synchronous PROFIBUS/PROFINET controller last failed.</td>
<td>-</td>
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<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>r2067[0...1]</td>
<td>IF1 PZD maximum interconnected / IF1 PZDmaxIntercon</td>
<td>Display for the maximum interconnected PZD in the receive/send direction</td>
<td>All objects</td>
<td>-</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
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<td>Communications</td>
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<td>-</td>
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<td>1</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Index 0: receive (r2050, r2060)</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>[0] = Unconditionally open holding brake (p0855)</td>
<td></td>
<td></td>
<td>[1] = Signal 1</td>
<td>Freeze value</td>
<td>0000 bin</td>
</tr>
<tr>
<td>p2072</td>
<td>Response receive value after PZD failure / Resp aft PZD fail</td>
<td>Sets the response for the receive value (r2090) after PZD failure.</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>T</td>
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<td>1</td>
<td>Max</td>
<td>Factory setting</td>
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<td>Bit field:</td>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
<td>0 signal</td>
<td>FP</td>
<td>Unconditionally open holding brake (p0855)</td>
<td>Freeze value</td>
<td>Zero the value</td>
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</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2074[0...19] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv</td>
<td>Displays the PROFIBUS address of the sender from which the process data (PZD) is received.</td>
<td>Can be changed: -</td>
<td>Access level: 3</td>
</tr>
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<td>Calculated: -</td>
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<td></td>
<td>Dyn. index: -</td>
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</tr>
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<td></td>
<td></td>
<td>P-Group: Communications</td>
<td></td>
</tr>
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<td></td>
<td>Unit group: -</td>
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<td>Not for motor type: -</td>
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<td>Scaling: -</td>
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<td></td>
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<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
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</tr>
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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

**Note:**
- IF1: Interface 1
- Value range:
  - 0 - 125: Bus address of the sender
  - 65535: Not assigned

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
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<td>r2074[0...63] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv</td>
<td>Displays the PROFIBUS address of the sender from which the process data (PZD) is received.</td>
<td>Can be changed: -</td>
<td>Access level: 3</td>
</tr>
<tr>
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<td>Calculated: -</td>
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<td>Not for motor type: -</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
- [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
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36
[36] = PZD 37
[37] = PZD 38
[38] = PZD 39
[39] = PZD 40
[40] = PZD 41
[41] = PZD 42
[42] = PZD 43
[43] = PZD 44
[44] = PZD 45
[45] = PZD 46
[46] = PZD 47
[47] = PZD 48
[48] = PZD 49
[49] = PZD 50
[50] = PZD 51
[51] = PZD 52
[52] = PZD 53
[53] = PZD 54
[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

Note:
IF1: Interface 1

Value range:
0 - 125: Bus address of the sender
65535: Not assigned

r2074[0...4] IF1 PROFIdrive diagnostics bus address PZD receive / IF1diag addr recv

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

Data type: Unsigned16
Dyn. index: -
Func. diagram: -

P-Group: Communications
Unit group: -
Unit selection: -

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

Min
Max
Factory setting

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
Parameters

2.2 List of parameters

Note:

IF1: Interface 1

Value range:

0 - 125: Bus address of the sender
65535: Not assigned

r2075[0...19] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

Can be changed: -
Data type: Unsigned16
P-Group: Communications
Not for motor type: -
Min
Max

Description:
Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

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

Note:

IF1: Interface 1

Value range:

0 - 242: Byte offset
65535: Not assigned

r2075[0...63] IF1 PROFIdrive diagnostics telegram offset PZD receive / IF1 diag offs recv

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

Can be changed: -
Data type: Unsigned16
P-Group: Communications
Not for motor type: -
Min
Max

Description:
Displays the PZD byte offset in the PROFIdrive receive telegram (controller output).

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
### 2 Parameters

#### 2.2 List of parameters

[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  
[32] = PZD 33  
[33] = PZD 34  
[34] = PZD 35  
[35] = PZD 36  
[36] = PZD 37  
[37] = PZD 38  
[38] = PZD 39  
[39] = PZD 40  
[40] = PZD 41  
[41] = PZD 42  
[42] = PZD 43  
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[48] = PZD 49  
[49] = PZD 50  
[50] = PZD 51  
[51] = PZD 52  
[52] = PZD 53  
[53] = PZD 54  
[54] = PZD 55  
[55] = PZD 56  
[56] = PZD 57  
[57] = PZD 58  
[58] = PZD 59  
[59] = PZD 60  
[60] = PZD 61  
[61] = PZD 62  
[62] = PZD 63  
[63] = PZD 64

**Note:**  
IF1: Interface 1

**Value range:**  
0 - 242: Byte offset  
65535: Not assigned
### 2 Parameters

#### 2.2 List of parameters

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<th>Description</th>
<th>Index</th>
<th>Value Range</th>
<th>Note</th>
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<td>Min Max Factory setting</td>
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<td>Unit group: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
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<td></td>
<td>Min</td>
<td>Max</td>
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<td></td>
<td>Value range:</td>
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<td>0 - 242: Byte offset</td>
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<td>65535: Not assigned</td>
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<td>Min Max Factory setting</td>
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<td>P-Group: Communications</td>
<td>Unit group: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
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<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value range:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 - 242: Byte offset</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>65535: Not assigned</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r2076[0...63]</td>
<td>IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: - Func. diagram: 2410</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit group: - Unit selection: -</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: - Expert list: 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</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:** Displays the PZD byte offset in the PROFIdrive send telegram (controller input).

**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
- [32] = PZD 33
- [33] = PZD 34
- [34] = PZD 35
- [35] = PZD 36
- [36] = PZD 37
- [37] = PZD 38
- [38] = PZD 39
- [39] = PZD 40
- [40] = PZD 41
- [41] = PZD 42
- [42] = PZD 43
- [43] = PZD 44
- [44] = PZD 45
- [45] = PZD 46
- [46] = PZD 47
- [47] = PZD 48
- [48] = PZD 49
- [49] = PZD 50
- [50] = PZD 51
- [51] = PZD 52
- [52] = PZD 53
- [53] = PZD 54
### 2 Parameters

#### 2.2 List of parameters

- [54] = PZD 55
- [55] = PZD 56
- [56] = PZD 57
- [57] = PZD 58
- [58] = PZD 59
- [59] = PZD 60
- [60] = PZD 61
- [61] = PZD 62
- [62] = PZD 63
- [63] = PZD 64

**Note:**
- IF1: Interface 1

**Value range:**
- 0 - 242: Byte offset
- 65535: Not assigned

---

### r2076[0...4]

**IF1 PROFIdrive diagnostics telegram offset PZD send / IF1 diag offs send**

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, 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>Dyn. index: -</td>
<td>Func. diagram: 2410</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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 PZD byte offset in the PROFIdrive send telegram (controller input).

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

**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**

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 addresses of the slaves (peers) where peer-to-peer data transfer has been configured via PROFIBUS.

**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

---

### p2079

**IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext**

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</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>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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 390</td>
<td>Max 999</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the send and receive telegram.

**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
2 Parameters

2.2 List of parameters

395: SIEMENS telegram 395, PZD-4/25
396: SIEMENS telegram 396, PZD-20/21
999: Free telegram configuration with BICO

Note:
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.

<table>
<thead>
<tr>
<th>p2079</th>
<th>IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>1</td>
<td>999</td>
</tr>
</tbody>
</table>

Description:
Sets the send and receive telegram.
Contrary to p0922, a telegram can be selected using p2079 and subsequently expanded.

Value:
1: Standard telegram 1, PZD-2/2
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

Note:
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.

<table>
<thead>
<tr>
<th>p2080[0...15]</th>
<th>BI: Binector-connector converter status word 1 / Bin/con ZSW1</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>-</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

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
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BI: Binector-connector converter status word 2 / Bin/con ZSW2</th>
</tr>
</thead>
</table>
| **Index:** | [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. |
| **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. |

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BI: Binector-connector converter status word 3 / Bin/con ZSW3</th>
</tr>
</thead>
</table>
| **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 |
| **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. |
2 Parameters

2.2 List of parameters

[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.

**p2083[0...15]**

BI: Binector-connector converter status word 4 / Bin/con ZSW4

| Description: | Selects bits to be sent to the PROFe drive controller. |
| Index: | The individual bits are combined to form free status word 4. |

<table>
<thead>
<tr>
<th>Index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= Bit 0</td>
</tr>
<tr>
<td>[1]</td>
<td>= Bit 1</td>
</tr>
<tr>
<td>[2]</td>
<td>= Bit 2</td>
</tr>
<tr>
<td>[3]</td>
<td>= Bit 3</td>
</tr>
<tr>
<td>[4]</td>
<td>= Bit 4</td>
</tr>
<tr>
<td>[5]</td>
<td>= Bit 5</td>
</tr>
<tr>
<td>[6]</td>
<td>= Bit 6</td>
</tr>
<tr>
<td>[7]</td>
<td>= Bit 7</td>
</tr>
<tr>
<td>[8]</td>
<td>= Bit 8</td>
</tr>
<tr>
<td>[9]</td>
<td>= Bit 9</td>
</tr>
<tr>
<td>[10]</td>
<td>= Bit 10</td>
</tr>
<tr>
<td>[12]</td>
<td>= Bit 12</td>
</tr>
<tr>
<td>[13]</td>
<td>= Bit 13</td>
</tr>
<tr>
<td>[14]</td>
<td>= Bit 14</td>
</tr>
<tr>
<td>[15]</td>
<td>= Bit 15</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p2088, r2089

**p2084[0...15]**

BI: Binector-connector converter status word 5 / Bin/con ZSW5

| Description: | Selects bits to be sent to the PROFe drive controller. |
| Index: | The individual bits are combined to form free status word 5. |

<table>
<thead>
<tr>
<th>Index</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= Bit 0</td>
</tr>
<tr>
<td>[1]</td>
<td>= Bit 1</td>
</tr>
<tr>
<td>[2]</td>
<td>= Bit 2</td>
</tr>
<tr>
<td>[3]</td>
<td>= Bit 3</td>
</tr>
<tr>
<td>[4]</td>
<td>= Bit 4</td>
</tr>
<tr>
<td>[5]</td>
<td>= Bit 5</td>
</tr>
<tr>
<td>[6]</td>
<td>= Bit 6</td>
</tr>
<tr>
<td>[7]</td>
<td>= Bit 7</td>
</tr>
<tr>
<td>[8]</td>
<td>= Bit 8</td>
</tr>
<tr>
<td>[9]</td>
<td>= Bit 9</td>
</tr>
<tr>
<td>[10]</td>
<td>= Bit 10</td>
</tr>
<tr>
<td>[12]</td>
<td>= Bit 12</td>
</tr>
<tr>
<td>[13]</td>
<td>= Bit 13</td>
</tr>
<tr>
<td>[14]</td>
<td>= Bit 14</td>
</tr>
<tr>
<td>[15]</td>
<td>= Bit 15</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p2088, r2089
### p2088[0...4]

**Invert binector-connector converter status word / Bin/con ZSW inv**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</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>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>

### r2089[0...4]

**CO: Send binector-connector converter status word / Bin/con ZSW send**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</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>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>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Dependency:**
- Refer to: p2051, p2080, p2081, p2082, p2083

**Note:**
- r2089 together with p2080 to p2084 forms five binector-connector converters.

#### r2090.0...15

**BO: IF1 PROFIBUS PZD1 receive bit-serial / IF1 PZD1 recv bitw**

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<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
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**Note:** IF1: Interface 1

---

#### r2090.0...15

**BO: IF1 PROFIBUS PZD1 receive bit-serial / IF1 PZD1 recv bitw**

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<tr>
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<th>Bit</th>
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<th>0 signal</th>
<th>FP</th>
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**Note:** IF1: Interface 1
## 2 Parameters

### 2.2 List of parameters

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**Note:** IF1: Interface 1

---

**r2091.0...15**

**BO: IF1 PROFIdrive PZD2 receive bit-serial / IF1 PZD2 recv bitw**

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

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**Data type:** Unsigned16

**Dyn. index:** -

**Func. diagram:** 2460, 2481

**P-Group:** Communications

**Unit group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:** Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

---

**r2091.0...15**

**BO: IF1 PROFIdrive PZD2 receive bit-serial / IF1 PZD2 recv bitw**

**TM150, TM15DI_DO, TM31**

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**Data type:** Unsigned16

**Dyn. index:** -

**Func. diagram:** 2468

**P-Group:** Communications

**Unit group:** -

**Unit selection:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Min**

**Max**

**Factory setting**

**Description:** Binector output for bit-serial interconnection of PZD2 received from the PROFIdrive controller.

---
2 Parameters

2.2 List of parameters

r2092.0...15

BO: IF1 PROFlldrive PZD3 receive bit-serial / IF1 PZD3 recv bitw

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dyn. index: - Func. diagram: 2468
P-Group: Communications Unit 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 from the PROFlldriver controller.

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

r2092.0...15

BO: IF1 PROFlldrive PZD3 receive bit-serial / IF1 PZD3 recv bitw

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dyn. index: - Func. diagram: 2460
P-Group: Communications Unit 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 from the PROFlldriver controller.

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
R2093.0...15  | BO: IF1 PROFIdrive PZD4 receive bit-serial / IF1 PZD4 recv bitw

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

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<th>Access level:</th>
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<th>Func. diagram:</th>
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<td>2468</td>
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<th>Unit selection:</th>
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<tr>
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**Description:**

Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

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<th>Bit</th>
<th>Signal name</th>
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<td>-</td>
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<tr>
<td>03</td>
<td>Bit 3</td>
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<td>-</td>
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</tr>
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<td>Bit 7</td>
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<td>-</td>
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<tr>
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**Note:** IF1: Interface 1

R2093.0...15  | BO: IF1 PROFIdrive PZD4 receive bit-serial / IF1 PZD4 recv bitw

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

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**Description:**

Binector output for bit-serial interconnection of PZD4 (normally control word 2) received from the PROFIdrive controller.

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<th>0 signal</th>
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<tr>
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<td>Bit 2</td>
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**Note:** IF1: Interface 1
### 2 Parameters

#### 2.2 List of parameters

**r2094.0...15**

**BO: Connector-binector converter binector output / Con/bin outp**

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<td>-</td>
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<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
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<td>Bit 10</td>
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</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

---

**r2094.0...15**

**BO: Connector-binector converter binector output / Con/bin outp**

<table>
<thead>
<tr>
<th>Bit field</th>
<th>Bit</th>
<th>Signal name</th>
<th>Signal 1</th>
<th>Signal 0</th>
<th>Factory setting</th>
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</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
## 2 Parameters

### 2.2 List of parameters

**BO: Connector-binector converter binector output / Con/bin outp**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Can be changed: - Calculated: - Access level: 3 P-Group: Communications Unit group: - Unit selection: -</td>
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<td>2468</td>
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<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL</strong></td>
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<tr>
<td><strong>DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</strong></td>
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</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].

### Bit field:

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<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>
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<td>-</td>
</tr>
<tr>
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<tr>
<td>02</td>
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<tr>
<td>03</td>
<td>Bit 3</td>
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<tr>
<td>04</td>
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<td>10</td>
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**Dependency:** Refer to: p2099

**r2095.0...15**

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<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM15DI_DO, TM31</strong></td>
<td>Can be changed: - Calculated: - Access level: 3 P-Group: Communications Unit group: - Unit selection: -</td>
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</table>

**Description:**

Binector output for bit-serial interconnection of a PZD word received from the PROFIdrive controller.

The PZD is selected via p2099[1].

### Bit field:

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<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>
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<tr>
<td>02</td>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
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<tr>
<td>07</td>
<td>Bit 7</td>
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<td>Bit 8</td>
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<tr>
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**Dependency:** Refer to: p2099
### 2 Parameters

#### 2.2 List of parameters

**p2098[0...1]**

**Inverter connector-binector converter binector output / Con/bin outp inv**

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<th>FP</th>
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<td>Bit 0</td>
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<tr>
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<td>Not inverted</td>
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<tr>
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<td>Bit 2</td>
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<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
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<td>-</td>
</tr>
<tr>
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<td>Bit 4</td>
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<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
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</tr>
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<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>
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<td>Bit 9</td>
<td>Inverted</td>
<td>Not inverted</td>
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<tr>
<td>10</td>
<td>Bit 10</td>
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</tr>
<tr>
<td>11</td>
<td>Bit 11</td>
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<td>Not inverted</td>
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<td>Bit 15</td>
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**Dependency:**
Refer to: r2094, r2095, p2099

**p2098[0...1]**

**Inverter connector-binector converter binector output / Con/bin outp inv**

<table>
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<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
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</thead>
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</tr>
<tr>
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</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
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<td>Not inverted</td>
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</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
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<tr>
<td>15</td>
<td>Bit 15</td>
<td>Inverted</td>
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</tbody>
</table>

**Dependency:**
Refer to: r2094, r2095, p2099
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2099[0...1]</strong></td>
<td><strong>CI: Connector-binector converter signal source / Con/bin S_src</strong></td>
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</tr>
<tr>
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<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<td>Func. diagram: 2460, 2481</td>
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<td>P-Group: Communications</td>
<td>Unit 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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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the signal source for the connector-binector converter.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A PZD receive word can be selected as signal source. The signals are available to be serially passed-on (interconnection).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td></td>
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<tr>
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<td>Refer to: r2094, r2095</td>
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</tr>
<tr>
<td></td>
<td>Note:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2100[0...19]</strong></td>
<td><strong>Change fault response fault number / Chng resp F_no</strong></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>Selects the faults for which the fault response should be changed</td>
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<tr>
<td></td>
<td>Dependency:</td>
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<tr>
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<td>The fault is selected and the required response is set under the same index. Refer to: p2101</td>
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<td>Note:</td>
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<tr>
<td></td>
<td>Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.</td>
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2 Parameters

2.2 List of parameters

### p2100[0...19] Change fault response fault number / Chng resp F_no

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<th>Selects the faults for which the fault response should be changed</th>
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<tr>
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### p2101[0...19] Change fault response response / Chng resp resp

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<td>Dependency:</td>
<td>The fault is selected and the required response is set under the same index.</td>
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<tr>
<td>Notice:</td>
<td>For the following cases, it is not possible to re-parameterize the fault response to a fault:</td>
</tr>
<tr>
<td></td>
<td>- Fault number does not exist (exception value = 0).</td>
</tr>
<tr>
<td></td>
<td>- Message type is not &quot;fault&quot; (F).</td>
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<tr>
<td></td>
<td>- Fault response is not permissible for the set fault number.</td>
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<tr>
<td>Note:</td>
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### p2101[0...19] Change fault response response / Chng resp resp

<table>
<thead>
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<tbody>
<tr>
<td>Dependency:</td>
<td>The fault is selected and the required response is set under the same index.</td>
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<td>Notice:</td>
<td>For the following cases, it is not possible to re-parameterize the fault response to a fault:</td>
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<tr>
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<td>- Fault number does not exist (exception value = 0).</td>
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<td>- Message type is not &quot;fault&quot; (F).</td>
</tr>
<tr>
<td></td>
<td>- Fault response is not permissible for the set fault number.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

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.
Parameter values designated as "reserved", act just like the value = 2 (OFF2)

<table>
<thead>
<tr>
<th>p2101[0...19]</th>
<th>Change fault response response / Chng resp resp</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
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<tr>
<td>P-Group: Messages</td>
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<td>Unit group: -</td>
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<td>Expert list: 1</td>
</tr>
<tr>
<td>0</td>
<td>Factory setting</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.
Notice: For the following cases, it is not possible to re-parameterize the fault response to a fault:
- Fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Fault response is not permissible for the set fault number.
Note: Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

<table>
<thead>
<tr>
<th>p2102</th>
<th>BI: Acknowledge all faults / Ackn all faults</th>
</tr>
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<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
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</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
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<tr>
<td>Min</td>
<td>Scaling: -</td>
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<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>-</td>
<td>Factory setting</td>
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</tbody>
</table>

Description: Sets the signal source to acknowledge all faults at all drive objects of the drive system.
Note: A fault acknowledgement is triggered with a 0/1 signal.

<table>
<thead>
<tr>
<th>p2103</th>
<th>BI: 1. Acknowledge faults / 1. Acknowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31</td>
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<tr>
<td>Data type: Unsigned32 / Binary</td>
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<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
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<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>-</td>
<td>Factory setting</td>
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</tbody>
</table>

Description: Sets the first signal source to acknowledge faults.
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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Note</th>
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<tbody>
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<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Sets the first signal source to acknowledge faults.</td>
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### 2 Parameters

#### 2.2 List of parameters

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<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
<th>Factories setting</th>
</tr>
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<tbody>
<tr>
<td><strong>p2106</strong></td>
<td>BI: External fault 1 / External fault 1</td>
<td>Sets the signal source for external fault 1.</td>
<td>-1</td>
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<tr>
<td><strong>p2106[0...n]</strong></td>
<td>BI: External fault 1 / External fault 1</td>
<td>Sets the signal source for external fault 1.</td>
<td>-1</td>
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<tr>
<td><strong>p2107</strong></td>
<td>BI: External fault 2 / External fault 2</td>
<td>Sets the signal source for external fault 2.</td>
<td>-1</td>
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<tr>
<td><strong>p2107[0...n]</strong></td>
<td>BI: External fault 2 / External fault 2</td>
<td>Sets the signal source for external fault 2.</td>
<td>-1</td>
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### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
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<th>Description</th>
<th>Data type</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2108</strong></td>
<td>BI: External fault 3 / External fault 3</td>
<td>Can be changed: U, T; Calculated: -</td>
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<td><strong>DC_CTRL</strong>, <strong>DC_CTRL_R</strong>, <strong>DC_CTRL_R_S</strong>, <strong>DC_CTRL_S</strong></td>
<td><strong>CU_DC</strong>, <strong>CU_DC_R</strong>, <strong>CU_DC_R_S</strong>, <strong>TM150</strong>, <strong>TM15DI_DO</strong>, <strong>TM31</strong></td>
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<td><strong>Dyn. index</strong>: CDS, p0170</td>
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<td>P-Group: Messages</td>
<td><strong>Unit group</strong>: -</td>
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<td><strong>Scaling</strong>: -</td>
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<tr>
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<td>Min -</td>
<td>Max -</td>
<td></td>
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<tr>
<td></td>
<td><strong>Dependency</strong>: Refer to: p3110, p3111, p3112</td>
<td><strong>Note</strong>: 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.</td>
<td></td>
</tr>
<tr>
<td><strong>r2109[0...63]</strong></td>
<td>Fault time removed in milliseconds / t_flt resolved ms</td>
<td>Can be changed: -; Calculated: -</td>
<td>3</td>
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<tr>
<td></td>
<td><strong>DC_CTRL</strong>, <strong>DC_CTRL_R</strong>, <strong>DC_CTRL_R_S</strong>, <strong>DC_CTRL_S</strong>, <strong>CU_DC</strong>, <strong>CU_DC_R</strong>, <strong>CU_DC_R_S</strong>, <strong>TM150</strong>, <strong>TM15DI_DO</strong>, <strong>TM31</strong></td>
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<td>8050, 8060</td>
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<td>P-Group: Messages</td>
<td><strong>Dyn. index</strong>: -</td>
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<td>Not for motor type: -</td>
<td><strong>Unit group</strong>: -</td>
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<td>Min -</td>
<td>Max -</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dependency</strong>: Refer to: r0945, r0947, r0948, r0949, r2114, r2130, r2133, r2136, r3115, r3120, r3122</td>
<td><strong>Notice</strong>: The time comprises r2136 (days) and r2109 (milliseconds).</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: 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.</td>
<td><strong>Factory setting</strong>: -</td>
<td></td>
</tr>
</tbody>
</table>

**Access level**: 3

**Data type**: Unsigned32 / Binary

**Dyn. index**: CDS, p0170

**Unit group**: -

**Scaling**: -

**Expert list**: 1

**Min Max Factory setting**: - [-ms] - [-ms] - [-ms]
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter (r2109[0...63])</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fault time removed in milliseconds / t_flt resolved ms</td>
<td>Displays the system runtime in milliseconds when the fault was removed.</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2114, r2130, r2133, r2136, r3115, r3120, r3122</td>
<td>The time comprises r2136 (days) and r2109 (milliseconds).</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_S</td>
<td></td>
<td></td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (r2110[0...63])</th>
<th>Description</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm number / Alarm number</td>
<td></td>
<td></td>
<td>The structure of the fault buffer and the assignment of the indices is shown in r0945.</td>
</tr>
<tr>
<td>All objects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>Access level:</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index:</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit group:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min - [ms]</td>
<td>Max - [ms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p2111)</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm counter / Alarm counter</td>
<td>Number of alarms that have occurred after the last reset.</td>
<td>When p2111 is set to 0, the following is initiated:</td>
<td></td>
</tr>
<tr>
<td>All objects</td>
<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>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>Access level:</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit group:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min 0</td>
<td>Max 65535</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p2111)</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alarm counter / Alarm counter</td>
<td>Number of alarms that have occurred after the last reset.</td>
<td>When p2111 is set to 0, the following is initiated:</td>
<td></td>
</tr>
<tr>
<td>TM150, TM15DI_DO, TM31</td>
<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>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>Calculated:</td>
<td>Access level:</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index:</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit group:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min 0</td>
<td>Max 65535</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2112</td>
<td>Sets the signal source for external alarm 1.</td>
<td>An external alarm is triggered with a 1/0 signal.</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>r2114</td>
<td>Displays the total system runtime for the drive unit.</td>
<td>The time comprises r2114[0] (milliseconds) and r2114[1] (days). After r2114[0] has reached a value of 86,400,000 ms (24 hours) this value is reset and r2114[1] is incremented.</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>p2116</td>
<td>Sets the signal source for external alarm 2.</td>
<td>An external alarm is triggered with a 1/0 signal.</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2116[0...n]</strong></td>
<td><strong>BI: External alarm 2 / External alarm 2</strong></td>
<td>Sets the signal source for external alarm 2.</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td>Func. diagram: 2546</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Factory setting</td>
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<tr>
<td>Max</td>
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</tr>
</tbody>
</table>

**Description:** Sets the signal source for external alarm 2.

**Note:** An external alarm is triggered with a 1/0 signal.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2117</strong></td>
<td><strong>BI: External alarm 3 / External alarm 3</strong></td>
<td>Sets the signal source for external alarm 3.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
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<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Factory setting</td>
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</tbody>
</table>

**Description:** Sets the signal source for external alarm 3.

**Note:** An external alarm is triggered with a 1/0 signal.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2117[0...n]</strong></td>
<td><strong>BI: External alarm 3 / External alarm 3</strong></td>
<td>Sets the signal source for external alarm 3.</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td>Func. diagram: 2546</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Factory setting</td>
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</tbody>
</table>

**Description:** Sets the signal source for external alarm 3.

**Note:** An external alarm is triggered with a 1/0 signal.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2118[0...19]</strong></td>
<td><strong>Change message type message number / Chng type msg_no</strong></td>
<td>Selects faults or alarms for which the message type should be changed.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
<td>Func. diagram: 8050, 8075</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Factory setting</td>
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</tr>
</tbody>
</table>

**Description:** Selects faults or alarms for which the message type should be changed.

**Dependency:** Selects the fault or alarm selection and sets the required type of message realized under the same index.

**Note:** Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2118[0...19]</strong></td>
<td><strong>Change message type message number / Chng type msg_no</strong></td>
<td>Selects faults or alarms for which the message type should be changed.</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Calculated: -</td>
<td>Func. diagram: 8075</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Dyn. index: CDS, p0170</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Factory setting</td>
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</tr>
</tbody>
</table>

**Description:** Selects faults or alarms for which the message type should be changed.

**Dependency:** Selects the fault or alarm selection and sets the required type of message realized under the same index.

**Note:** Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.
2 Parameters

2.2 List of parameters

**Dependency:**
Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2119

**Note:**
Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

<table>
<thead>
<tr>
<th>p2119[0...19] Change message type type / Change type type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong> <strong>CU_DC_R_S,</strong> <strong>CU_DC_S, DC_CTRL,</strong> <strong>DC_CTRL_R,</strong> <strong>DC_CTRL_R_S,</strong> <strong>DC_CTRL_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the message type for the selected fault or alarm.

**Value:**
1: Fault (F)
2: Alarm (A)
3: No message (N)

**Dependency:**
Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2118

**Note:**
Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

The message type can only be changed for messages with the appropriate identification (exception, value = 0).

Example:
F12345(A) --> Fault F12345 can be changed to alarm A12345.

In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.

<table>
<thead>
<tr>
<th>p2119[0...19] Change message type type / Change type type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM15DI_DO,</strong> <strong>TM31</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the message type for the selected fault or alarm.

**Value:**
1: Fault (F)
2: Alarm (A)
3: No message (N)

**Dependency:**
Selects the fault or alarm selection and sets the required type of message realized under the same index.

Refer to: p2118

**Note:**
Re-parameterization is also possible if a message is present. The change only becomes effective after the message has gone.

The message type can only be changed for messages with the appropriate identification (exception, value = 0).

Example:
F12345(A) --> Fault F12345 can be changed to alarm A12345.

In this case, the message number that may be possibly entered in p2100[0...19] and p2126[0...19] is automatically removed.

***r2120***

**CO: Sum of fault and alarm buffer changes / Sum buffer changed**

<table>
<thead>
<tr>
<th>All objects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the sum of all of the fault and alarm buffer changes in the drive unit.
## 2 Parameters

### 2.2 List of parameters

**r2121**

**CO: Counter alarm buffer changes / Alrm buff changed**

<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>
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<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dyn. index:** -  
**Func. diagram:** 8065

**P-Group:** Messages  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Dependency:** Refer to: r0944, r2121

**Description:** This counter is incremented every time the alarm buffer changes.

**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)

**r2122[0...63]**

**Alarm code / Alarm code**

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**Dyn. index:** -  
**Func. diagram:** 8065

**P-Group:** Messages  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Dependency:** Refer to: r2110, r2122, r2123, r2124, r2125

**Description:** Displays the number of alarms that have occurred.

**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)

**r2122[0...63]**

**Alarm code / Alarm code**

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, TM31</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  
**Dyn. index:** -  
**Func. diagram:** 8050, 8065

**P-Group:** Messages  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Dependency:** Refer to: r2110, r2123, r2124, r2125, r2134, r2145, r2146, r3121, r3123

**Description:** Displays the number of alarms that have occurred.

**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

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays the system runtime in milliseconds when the alarm occurred.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>Refer to: r2110, r2114, r2122, r2124, r2125, r2134, r2145, r2146, r3121, r3123</td>
</tr>
<tr>
<td>Notice</td>
<td>The time comprises r2145 (days) and r2123 (milliseconds).</td>
</tr>
<tr>
<td>Note</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
<tr>
<td></td>
<td>The structure of the alarm buffer and the assignment of the indices is shown in r2122.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type</th>
<th>Unsigned32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group</td>
<td>Messages</td>
</tr>
<tr>
<td>Min</td>
<td>- [ms]</td>
</tr>
<tr>
<td>Max</td>
<td>- [ms]</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, TM31</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Data type</th>
<th>Integer32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group</td>
<td>Messages</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, TM31</th>
</tr>
</thead>
</table>

### r2124[0...63] Alarm value / Alarm value

<table>
<thead>
<tr>
<th>Description</th>
<th>Displays additional information about the active alarm (as integer number).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependency</td>
<td>Refer to: r2110, r2122, r2123, r2125, r2134, r2145, r2146, r3121, r3123</td>
</tr>
<tr>
<td>Note</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
<tr>
<td></td>
<td>The structure of the alarm buffer and the assignment of the indices is shown in r2122.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type</th>
<th>Integer32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group</td>
<td>Messages</td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>-</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>TM150, TM15DI_DO, TM31</th>
</tr>
</thead>
</table>
### 2 Parameters

#### 2.2 List of parameters

**r2125[0...63]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Alarm time removed in milliseconds / ( t_{\text{alarm res ms}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td><strong>Dyn. index:</strong> - <strong>Unit group:</strong> Messages <strong>Unit selection:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
<td><strong>Scaling:</strong> - <strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min</strong> - [ms] <strong>Max</strong> - [ms]</td>
</tr>
<tr>
<td><strong>- [ms]</strong></td>
<td><strong>- [ms]</strong></td>
</tr>
</tbody>
</table>

**Notice:**
The time comprises r2146 (days) and r2125 (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.

**r2125[0...63]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Alarm time removed in milliseconds / ( t_{\text{alarm res ms}} )</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM15DI_DO, TM31</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
<td><strong>Dyn. index:</strong> - <strong>Unit group:</strong> Messages <strong>Unit selection:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
<td><strong>Scaling:</strong> - <strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min</strong> - [ms] <strong>Max</strong> - [ms]</td>
</tr>
<tr>
<td><strong>- [ms]</strong></td>
<td><strong>- [ms]</strong></td>
</tr>
</tbody>
</table>

**Notice:**
The time comprises r2146 (days) and r2125 (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.

**p2126[0...19]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Change acknowledge mode fault number / Chng ackn F_no</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> - <strong>Unit group:</strong> Messages <strong>Unit selection:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
<td><strong>Scaling:</strong> - <strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min</strong> 0 <strong>Max</strong> 65535</td>
</tr>
<tr>
<td><strong>- [ms]</strong></td>
<td><strong>- [ms]</strong></td>
</tr>
</tbody>
</table>

**Dependency:**
Selects the faults for which the acknowledge mode is to be changed

**Note:**
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.

**p2126[0...19]**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Change acknowledge mode fault number / Chng ackn F_no</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TM150, TM15DI_DO, TM31</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> - <strong>Unit group:</strong> Messages <strong>Unit selection:</strong> - <strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Messages</td>
<td><strong>Scaling:</strong> - <strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min</strong> 0 <strong>Max</strong> 65535</td>
</tr>
<tr>
<td><strong>- [ms]</strong></td>
<td><strong>- [ms]</strong></td>
</tr>
</tbody>
</table>

**Dependency:**
Selects the faults for which the acknowledge mode is to be changed

**Note:**
Re-parameterization is also possible if a fault is present. The change only becomes effective after the fault has been resolved.
2 Parameters

2.2 List of parameters

**p2127[0...19]**  
**Change acknowledge mode mode / Chng ackn mode**

<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>CU_DC, CU_DC_R,</td>
<td>Sets the acknowledge mode for selected fault.</td>
<td>1: Acknowledgment only using POWER ON</td>
<td>Selects the faults and sets the required acknowledge mode realized under</td>
<td>It is not possible to re-parameterize the acknowledge mode for a fault</td>
<td>Re-parameterization is also possible if a fault is present. The</td>
</tr>
<tr>
<td>CU_DC_R_S,</td>
<td></td>
<td>2: Ack IMMEDIATELY after the fault cause has been removed</td>
<td>the same index</td>
<td>in the following cases:</td>
<td>change only becomes effective after the fault has been resolved.</td>
</tr>
<tr>
<td>CU_DC_S, DC_CTRL,</td>
<td></td>
<td>3: Acknowledgement only for PULSE INHIBIT</td>
<td></td>
<td>- Fault number does not exist (exception value = 0).</td>
<td>The acknowledge mode can only be changed for faults with the</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td></td>
<td></td>
<td></td>
<td>- Message type is not &quot;fault&quot; (F).</td>
<td>appropriate identification.</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td></td>
<td></td>
<td></td>
<td>- Acknowledge mode is not permissible for the set fault number.</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min Max</td>
<td>1 3</td>
<td>1 3 1</td>
<td></td>
<td></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 for a fault in the following cases:
- Fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Acknowledge mode is not permissible for the set fault number.

**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.

**p2127[0...19]**  
**Change acknowledge mode mode / Chng ackn mode**

<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>TM150, TM15DI_DO,</td>
<td>Sets the acknowledge mode for selected fault.</td>
<td>1: Acknowledgment only using POWER ON</td>
<td>Selects the faults and sets the required acknowledge mode realized under</td>
<td>It is not possible to re-parameterize the acknowledge mode for a fault</td>
<td>Re-parameterization is also possible if a fault is present. The</td>
</tr>
<tr>
<td>TM31</td>
<td></td>
<td>2: Ack IMMEDIATELY after the fault cause has been removed</td>
<td>the same index</td>
<td>in the following cases:</td>
<td>change only becomes effective after the fault has been resolved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3: Acknowledgement only for PULSE INHIBIT</td>
<td></td>
<td>- Fault number does not exist (exception value = 0).</td>
<td>The acknowledge mode can only be changed for faults with the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Message type is not &quot;fault&quot; (F).</td>
<td>appropriate identification.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Acknowledge mode is not permissible for the set fault number.</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 for a fault in the following cases:
- Fault number does not exist (exception value = 0).
- Message type is not "fault" (F).
- Acknowledge mode is not permissible for the set fault number.

**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.
2 Parameters

2.2 List of parameters

### p2128[0...15]
#### Faults/alarms trigger selection / F/A trigger sel

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2128[0...15]</td>
<td>Sets the faults/alarms for which a trigger signal should be generated in r2129.0...15.</td>
<td>If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.</td>
<td>CO: r2128 = 0 → None of the selected messages has occurred. CO: r2129 &gt; 0 → At least one of the selected messages has occurred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CU_DC, CU_DC_R, CU_DC_S, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

**Data type:** Unsigned16  
**P-Group:** Messages  
**Min:** -  
**Max:** 65535  
**Factory setting:** 0

### p2129[0...15]
#### Faults/alarms trigger selection / F/A trigger sel

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p2129[0...15]</td>
<td>Sets the faults/alarms for which a trigger signal should be generated in r2129.0...15.</td>
<td>If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TM150, TM15DI_DO, TM31**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 3  
**Dyn. index:** -  
**Func. diagram:** 8050, 8070

### r2129.0...15
#### CO/BO: Faults/alarms trigger signal / F/A trigger signal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2129.0...15</td>
<td>Display and BICO output for the trigger signals of the faults/alarms set in p21218[0...15].</td>
</tr>
</tbody>
</table>

**All objects**

**Can be changed:** -  
**Calculated:** -  
**Access level:** 3  
**Data type:** Unsigned16  
**P-Group:** Messages  
**Min:** -  
**Max:** -  
**Unit group:** -  
**Unit selection:** -  
**Expert list:** 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>Trigger signal p2128[0]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Trigger signal p2128[1]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Trigger signal p2128[2]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Trigger signal p2128[3]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Trigger signal p2128[4]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Trigger signal p2128[5]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Trigger signal p2128[6]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Trigger signal p2128[7]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Trigger signal p2128[8]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Trigger signal p2128[9]</td>
<td>ON</td>
<td>OFF</td>
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<td>10</td>
<td>Trigger signal p2128[10]</td>
<td>ON</td>
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</tr>
<tr>
<td>11</td>
<td>Trigger signal p2128[11]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Trigger signal p2128[12]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Trigger signal p2128[13]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Trigger signal p2128[14]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Trigger signal p2128[15]</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** If the fault/alarm set in p2128[0...15] occurs, then the particular binector output r2129.0...15 is set.  
**Note:** CO: r2128 = 0 → None of the selected messages has occurred. CO: r2129 > 0 → At least one of the selected messages has occurred.
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Access level</th>
<th>Dependent parameters</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2130[0...63]</td>
<td>Fault time received in days / t_fault_recv days</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
<td></td>
<td>r0945, r0947, r0948, r0949, r2109, r2114, r2133, r2136, r3115, r3120, r3122</td>
<td>The time comprises r2130 (days) and r0948 (milliseconds). The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
<tr>
<td>r2131</td>
<td>CO: Actual fault code / Act fault code</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
<td></td>
<td>r3131, r3132</td>
<td>0: No fault present.</td>
</tr>
<tr>
<td>r2132</td>
<td>CO: Actual alarm code / Actual alarm code</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Unsigned16</td>
<td>-</td>
<td></td>
<td>r3131, r3132</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>-</td>
<td>-</td>
<td>3</td>
<td>FloatingPoint32</td>
<td>-</td>
<td></td>
<td>r0945, r0947, r0948, r0949, r2109, r2130, r2136, r3115</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
</tr>
</tbody>
</table>
## 2.2 List of parameters

### r2134[0...63] Alarm value for float values / Alarm value float

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
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<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
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<td>8065</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td>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>
<tr>
<td>Description:</td>
<td>Displays additional information about the active alarm for float values.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r2110, r2122, r2123, r2124, r2125, r2145, r2146, r3121, r3123</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### r2135.0...2 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2

| CU_DC, CU_DC_R, | Can be changed: | Calculated: | Access level: |
|                |                |             | 2             |
|                |                |             |               |
| Data type:     | Unsigned16     | Dyn. index: | Func. diagram: |
|                |                |             | 2548          |
| P-Group:       | Displays, signals | Unit group: | Unit selection: |
|                |                |             |               |
| Not for motor type: | Scaling: | Expert list: | 1 |
| Min           | Max            | Factory setting | |
|             |                |             |               |
| Description:  | Display and BICO output for the second status word of faults and alarms. |
| Bit field:    | Bit | Signal name | 1 signal | 0 signal | FP |
| 00           | Fault encoder 1 | Yes | No | - |
| 01           | Fault encoder 2 | Yes | No | - |
| 02           | Fault encoder 3 | Yes | No | - |

### r2135.0...15 CO/BO: Status word faults/alarms 2 / ZSW fault/alarm 2

| DC_CTRL,      | Can be changed: | Calculated: | Access level: |
|              |                |             | 2             |
|              |                |             |               |
| Data type:   | Unsigned16     | Dyn. index: | Func. diagram: |
|              |                |             | 2548          |
| P-Group:     | Displays, signals | Unit group: | Unit selection: |
|              |                |             |               |
| Not for motor type: | Scaling: | Expert list: | 1 |
| Min          | Max            | Factory setting | |
|             |                |             |               |
| Description: | Display and BICO output for the second status word of faults and alarms. |
| Bit field:   | Bit | Signal name | 1 signal | 0 signal | FP |
| 00           | Fault encoder 1 | Yes | No | - |
| 01           | Fault encoder 2 | Yes | No | - |
| 02           | Fault encoder 3 | Yes | No | - |
| 12           | Fault motor overtemperature | Yes | No | 8016 |
| 13           | Fault power unit thermal overload | Yes | No | 8014 |
| 14           | Alarm motor overtemperature | Yes | No | 8016 |
| 15           | Alarm power unit thermal overload | Yes | No | 8014 |

### r2136[0...63] Fault time removed in days / t_flt resolv days

<table>
<thead>
<tr>
<th>All objects</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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<tr>
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<td>3</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8060</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Messages</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list:</td>
<td>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>
<tr>
<td>Description:</td>
<td>Displays the system runtime in days when the fault was removed.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109, r2114, r2130, r2133, r3115, r3120, r3122</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice:</td>
<td>The time comprises r2136 (days) and r2109 (milliseconds).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2138.7...15</td>
<td>CO/BO: Control word faults/alarms / STW fault/alarm</td>
<td>Can be changed: -</td>
</tr>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2139.0...15</td>
<td>CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1</td>
<td>Can be changed: -</td>
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</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>00</td>
<td>Being acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Acknowledgment required</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>8060</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Safety message present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Internal message 1 present</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>8065</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Internal message 2 present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Alarm class bit 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Alarm class bit 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
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</tbody>
</table>
### 2.2 List of parameters

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Note</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Maintenance required</td>
<td>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 &quot;fault present&quot; or &quot;alarm present&quot; has occurred, a change in the buffer was also detected (r0944, r9744, r2121).</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Maintenance urgently required</td>
<td>Re bit 06, 08: These status bits are used for internal diagnostic purposes only. Re bit 12, 11: 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.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Fault gone/can be acknowledged</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### r2139.0...15

**CO/BO: Status word faults/alarms 1 / ZSW fault/alarm 1**

- **TM150, TM15DI_DO, TM31**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 2548
- **P-Group:** Displays, signals
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**
- **Description:** Display and BICO output for status word 1 of faults and alarms.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
<th>Signal 0</th>
<th>Signal 1</th>
<th>0 signal</th>
<th>1 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Being acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Acknowledgment required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fault present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Safety message present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Internal message 1 present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Alarm present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Internal message 2 present</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Alarm class bit 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Alarm class bit 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td>-</td>
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<tr>
<td>13</td>
<td>Maintenance required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Maintenance urgently required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Fault gone/can be acknowledged</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</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" or "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 12, 11: 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.

#### r2145[0...63]

**Alarm time received in days / t_alarm recv days**

- **All objects**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 8065
- **P-Group:** Messages
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**
- **Description:** Displays the system runtime in days when the alarm occurred.
- **Dependency:** Refer to: r2110, r2114, r2122, r2123, r2124, r2125, r2134, 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).
2 Parameters

2.2 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>r2146[0...63]</td>
<td>Alarm time removed in days / t_alarm_res_days</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Displays the system runtime in days when the alarm was cleared.</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8065</td>
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<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Messages</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice</td>
<td>The time comprises r2146 (days) and r2125 (milliseconds).</td>
<td></td>
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</table>

<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>p2147</td>
<td>Delete fault buffer of all drive objects / Del fault buffer</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
<td>Setting to delete the fault buffer of all existing drive objects.</td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8060</td>
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<tr>
<td>P-Group</td>
<td>Displays, signals</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0: Inactive</td>
<td>1: Start to delete the fault buffer of all drive objects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notice</td>
<td>The buffer parameters are cyclically updated in the background (refer to status signal in r2139).</td>
<td></td>
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<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>r2197.3...7</td>
<td>CO/BO: Status word monitoring 1 / ZSW monitor 1</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Display and BICO output for the first status word of the monitoring functions.</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
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<td>Func. diagram: 2534</td>
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<tr>
<td>P-Group</td>
<td>Messages</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bit field</td>
<td>Bit Signal name 1 signal 0 signal FP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>n_act &gt;= 0 Yes No 8011</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Speed setp - act val deviation in tolerance t_off Yes No 8011</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
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<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2199.1</td>
<td>CO/BO: Status word monitoring 3 / ZSW monitor 3</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Display and BICO output for the third status word of the monitoring functions.</td>
</tr>
<tr>
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<td>Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2537</td>
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<td>Messages</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bit field</td>
<td>Bit Signal name 1 signal 0 signal FP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>f or n comparison value reached or exceeded Yes No 8010</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**p2200[0...n]**

**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>Ramp-up/donw time independent of setpoint sign</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Integrator independent of Kp</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Output signal without ramp active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Actual value limiting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**BI: Technology controller enable / Tec_ctrl enable**

- Can be changed: T
- Calculated: -
- Access level: 2
- Data type: Unsigned32 / Binary
- Dyn. index: CDS, p0170
- P-Group: Technology
- Unit group: -
- Not for motor type: -
- Scaling: -
- Min: -
- Max: -
- Factory setting: 0

**Description:**
Sets the signal source to switch in/switch out the technology controller.

The technology controller is switched in with a 1 signal.

---

**p2252**

**Technology controller configuration / Tec_ctrl config**

**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 01 = 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 = integral 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**

**Dependency:**
Refer to: p2254, p2255
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p2254[0...n]</th>
<th>CI: Technology controller setpoint 2 / Tec_ctrl setp 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the signal source for the setpoint 2 of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2253, p2256</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p2255</th>
<th>Technology controller setpoint 1 scaling / Tec_ctrl set1 scal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the scaling for the setpoint 1 of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></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><strong>Description:</strong></td>
<td>Sets the scaling for the setpoint 2 of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2254</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p2257</th>
<th>Technology controller ramp-up time / Tec_ctrl t_ramp-up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the ramp-up time of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2252, p2258</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The ramp-up time is referred to 100 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p2258</th>
<th>Technology controller ramp-down time / Tec_ctrl t_ramp-dn</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the ramp-down time of the technology controller.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p2252, p2257</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The ramp-down time is referred to 100 %.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Coefficient</th>
<th>Data type</th>
<th>Dynamic index</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2260</td>
<td>Technology controller setpoint after ramp-function generator / Tec_ctr set aftRFG</td>
<td>- [%]</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>p2261</td>
<td>Technology controller setpoint filter time constant / Tec_ctrl set T</td>
<td>- [%]</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>r2262</td>
<td>Technology controller setpoint after filter / Tec_ctr set aftFIt</td>
<td>- [%]</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p2263</td>
<td>Technology controller type / Tec_ctrl type</td>
<td>- [%]</td>
<td>Integer16</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>p2264[0...n]</td>
<td>Technology controller actual value / Tec_ctrl act val</td>
<td>- [%]</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>
### 2.2 List of parameters

#### p2265
**Technology controller actual value filter time constant / Tec_ctrl act T**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Technology  
**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.

**Description:** Sets the time constant for the actual value filter (PT1) of the technology controller.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000 [s]</td>
<td>60.000 [s]</td>
<td>0.000 [s]</td>
<td></td>
</tr>
</tbody>
</table>

#### r2266
**CO: Technology controller actual value after filter / Tec_ctr act aftFlt**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Technology  
**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.

**Description:** Display and connector output for the smoothed actual value after the filter (PT1) of the technology controller.

<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>

#### p2267
**Technology controller upper limit actual value / Tec_ctrl u_lim act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Technology  
**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.

**Description:** Sets the upper limit for the actual value signal of the technology controller.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>200.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

#### p2268
**Technology controller lower limit actual value / Tec_ctrl l_lim act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Technology  
**Dependency:** Refer to: p2252, p2264, p2271  
**Notice:** If the actual value falls below this lower limit, this results in fault F07426.  
**Note:** Limiting only active for p2252.3 = 1.

**Description:** Sets the lower limit for the actual value signal of the technology controller.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>-200.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

#### p2269
**Technology controller gain actual value / Tech_ctrl gain act**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** Technology  
**Dependency:** Refer to: p2252, p2264, p2265, p2267, p2268, p2271  
**Notice:** Sets the scaling factor for the actual value of the technology controller.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 [%]</td>
<td>500.00 [%]</td>
<td>100.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>
### p2270 Technology controller actual value function / Tec_ctr ActVal fct

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Setting to use an arithmetic function for the actual value signal of the technology controller.</td>
<td>0: No function, 1: Root function (root from x), 2: Square function (x * x), 3: Cube function (x * x * x)</td>
</tr>
</tbody>
</table>

**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>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</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>0: No inversion, 1: Inversion actual value signal</td>
</tr>
</tbody>
</table>

**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).

### r2272 CO: Technology controller actual value scaled / Tech_ctr act scal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Display and connector output for the scaled actual value signal of the technology controller.</td>
<td>- [%], - [%], - [%]</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2264, p2265, r2266, p2267, p2268, p2269, p2270, p2271
## 2 Parameters

### 2.2 List of parameters

**r2273**  
**CO**: Technology controller error / Tec_ctrl error  

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Displays the error (system deviation) between the setpoint and actual value of the technology controller.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Technology</td>
<td>9_1</td>
<td>p0595</td>
<td>1</td>
<td>-[%]</td>
<td>-[%]</td>
<td>-[%]</td>
<td>7958</td>
<td>1</td>
</tr>
</tbody>
</table>

**Dependency**: Refer to: p2263

**Description**: Displays the error (system deviation) between the setpoint and actual value of the technology controller.

**Note**: p2274 = 0: Differentiation is disabled.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Sets the time constant for the differentiation (D component) of the technology controller.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Technology</td>
<td>9_1</td>
<td>p0595</td>
<td>1</td>
<td>-[s]</td>
<td>60.000 [s]</td>
<td>0.000 [s]</td>
<td>7958</td>
<td>1</td>
</tr>
</tbody>
</table>

**Dependency**: Refer to: p2252

**Description**: Sets the time constant for the differentiation (D component) of the technology controller.

**Note**: p2280 = 0: The proportional gain is disabled.

<table>
<thead>
<tr>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Sets the integral time (I component, integrating time constant) of the technology controller.</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>Technology</td>
<td>9_1</td>
<td>p0595</td>
<td>1</td>
<td>-[s]</td>
<td>60.000 [s]</td>
<td>0.000 [s]</td>
<td>7958</td>
<td>1</td>
</tr>
</tbody>
</table>

**Dependency**: Refer to: p2252

**Description**: Sets the integral time (I component, integrating time constant) of the technology controller.

**Note**: p2285 = 0: The integral time is disabled.

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Sets the signal source to hold the integrator for the technology controller.</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>CDS, p0170</td>
<td>Technology</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>7958</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency**: Refer to: p2252

**Description**: Sets the signal source to hold the integrator for the technology controller.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Access level</th>
<th>Unit</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p2289</strong>[0...n]**</td>
<td>CI: Technology controller pre-control signal / Tec_ctr prectr_sig</td>
<td>Sets the signal source for the pre-control signal of the technology controller.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
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<td></td>
</tr>
<tr>
<td>P-Group: Technology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dyn. index: CDS, p0170</td>
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</tr>
<tr>
<td>Expert list: 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting:</td>
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<td></td>
</tr>
<tr>
<td><strong>p2291</strong></td>
<td>CO: Technology controller maximum limiting / Tec_ctrl max_lim</td>
<td>Sets the maximum limit of the technology controller.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
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<td></td>
<td></td>
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<tr>
<td>P-Group: Technology</td>
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<tr>
<td>Min</td>
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<tr>
<td>Not for motor type:</td>
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<tr>
<td>Calculated:</td>
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<tr>
<td>Dyn. index:</td>
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<tr>
<td>Expert list: 1</td>
<td></td>
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<tr>
<td>Factory setting:</td>
<td></td>
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</tr>
<tr>
<td><strong>p2292</strong></td>
<td>CO: Technology controller minimum limiting / Tec_ctrl min_lim</td>
<td>Sets the minimum limit of the technology controller.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td></td>
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<tr>
<td>P-Group: Technology</td>
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<td>Min</td>
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<td>Not for motor type:</td>
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<td>Calculated:</td>
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<td>Factory setting:</td>
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</tr>
<tr>
<td><strong>p2293</strong></td>
<td>Technology controller ramp-up/ramp-down time / Tec_ctr t_RU/RD</td>
<td>Sets the ramping time for the output signal of the technology controller.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td></td>
<td></td>
<td></td>
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<td>Data type: FloatingPoint32</td>
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<td></td>
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<tr>
<td>P-Group: Technology</td>
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<tr>
<td>Min</td>
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<tr>
<td>Not for motor type:</td>
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<tr>
<td>Calculated:</td>
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<tr>
<td>Dyn. index:</td>
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<tr>
<td>Expert list: 1</td>
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<tr>
<td>Factory setting:</td>
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</tr>
<tr>
<td>Note:</td>
<td>The time refers to the set maximum and minimum limits (p2291, p2292).</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2294</td>
<td>Technology controller output signal / Tec_ctrl_outp_sig</td>
<td>FloatingPoint32</td>
<td>Technology</td>
<td>-</td>
<td>-</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>p2295</td>
<td>Technology controller output scaling / Tec_ctrl_outp_scal</td>
<td>FloatingPoint32</td>
<td>Technology</td>
<td>-</td>
<td>-</td>
<td>100.00 [%]</td>
</tr>
<tr>
<td>p2296[0...n]</td>
<td>Technology controller maximum limit signal source / Tec_ctrMaxLimS_src</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Technology</td>
<td>-</td>
<td>-</td>
<td>2291[0]</td>
</tr>
<tr>
<td>p2297[0...n]</td>
<td>Technology controller minimum limit signal source / Tec_ctrl_min_lims_s</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Technology</td>
<td>-</td>
<td>-</td>
<td>2292[0]</td>
</tr>
</tbody>
</table>
**2 Parameters**

**2.2 List of parameters**

### p2299[0...n]

**CI: Technology controller limit offset / Tech_ctrl lim offs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Unit group</th>
<th>Scaling</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Sets the signal source for the offset of the output limiting of the technology controller.</td>
<td>Unsigned32 or FloatingPoint32</td>
<td>Technology</td>
<td>PERCENT</td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the offset of the output limiting of the technology controller.

**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).
- 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.

### p2306

**Technology controller fault signal inversion / Tec_ctrl fault inv**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Unit group</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Setting to invert the fault signal of the technology controller. The setting depends on the type of control loop.</td>
<td>Integer16</td>
<td>Technology</td>
<td>3</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).
- 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.

### r2349.0...11

**CO/BO: Technology controller status word / Tec_ctrl status**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Unit group</th>
<th>Scaling</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL (Tech_ctrl), DC_CTRL_R (Tech_ctrl), DC_CTRL_R_S (Tech_ctrl), DC_CTRL_S (Tech_ctrl)</td>
<td>Displays the status word of the technology controller.</td>
<td>Unsigned32</td>
<td>Technology</td>
<td>PERCENT</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:** Displays the status word of the technology controller.

**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>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>
</tbody>
</table>
### Parameters

#### 2.2 List of parameters

**p2398**  
Energy-saving mode / En_save mode

- **Description:** Sets the operating mode for the energy-saving mode function.
- **Value:**
  - 0: Energy-saving mode inhibited
  - 1: Energy-saving mode activated
- **Dependency:** Refer to: p2200
- **Caution:** When this function is active, the motor can start again automatically.
- **Note:** When the energy-saving mode function (p2398 = 1) is activated, its behavior is defined as to whether the technology controller is additionally switched in (closed-loop) or switched out (open-loop).

  - The technology controller is enabled via binector input p2200 and its mode is set in p2251.
  - p2200 = 0, p2251 = 0, 1:
    - Energy-saving mode operates without technology controller (open-loop)
  - p2200 = 1, p2251 = 0:
    - Energy-saving mode operates with technology controller (closed-loop)
  - p2200 = 1, p2251 = 1:
    - Energy-saving mode operates without technology controller (open-loop) as its output is only used as supplementary setpoint and not as main setpoint.

**p2504[0...n]**  
LR motor/load motor revolutions / Mot/load motor rev

- **Description:** Sets the motor revolutions for the gearbox factor between the motor shaft and load shaft.
- **Dependency:** Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)
- **Note:** The gearbox factor between the encoder shaft and the motor shaft is set using p0432 and p0433.

**p2505[0...n]**  
LR motor/load load revolutions / Mot/load load rev

- **Description:** Sets the load revolutions for the gearbox factor between the motor shaft and load shaft.
- **Dependency:** Gearbox factor = motor revolutions (p2504) / load revolutions (p2505)
- **Note:** The gearbox factor between the encoder shaft and the motor shaft is set using p0432 and p0433.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2700</td>
<td>CO: Reference speed / n_ref</td>
<td>Can be changed: -</td>
<td>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.</td>
</tr>
<tr>
<td>r2701</td>
<td>CO: Reference voltage / Reference voltage</td>
<td>Can be changed: -</td>
<td>This BICO parameter provides the numerical value of the reference quantity p2001 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.</td>
</tr>
<tr>
<td>r2702</td>
<td>CO: Reference current / Reference current</td>
<td>Can be changed: -</td>
<td>This BICO parameter provides the numerical value of the reference quantity p2002 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.</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2703</td>
<td>CO: Reference torque / Reference torque</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td>Connector output of the reference quantity p2003 for torque (r0108.12 = 0) or force (r0108.12 = 1). 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. Refer to: p0505, r0108.12</td>
</tr>
<tr>
<td>r2704</td>
<td>CO: Reference power / Reference power</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td>Connector output of the reference quantity for powers p2004. 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. Refer to: r2004</td>
</tr>
<tr>
<td>r2705</td>
<td>CO: Reference angle / Reference angle</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
<td>Connector output of the reference quantity for angles p2005. The reference quantity corresponds to 100% or 4000 hex (word) or 4000 0000 hex (double word). This parameter has the unit degree. Refer to: p2005</td>
</tr>
</tbody>
</table>

### Description:
- r2703: The reference quantity is calculated as follows:
  - v = r0108.12 * r2703
  - s = r0108.12 * r2703
  - 0.5 * pi * r0108.12 * r2703
  - 0.5 * pi * r0108.12 * r2703

- r2704: The reference power is calculated as follows:
  - power = voltage * current
  - power = torque * speed

- r2705: The reference angle is calculated as follows:
  - angle = r0108.12 * r2705
  - angle = r0108.12 * r2705

### Dependency:
- r2703: p0505, r0108.12
- r2704: r2004
- r2705: p2005
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r2706 CO: Reference temp / Reference temp</td>
<td>Connector output of the reference quantity for temperatures.</td>
<td>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.</td>
</tr>
<tr>
<td>r2706 CO: Reference temp / Reference temp</td>
<td>Connector output of the reference quantity for temperatures. All temperatures specified as relative value are referred to this reference quantity.</td>
<td>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.</td>
</tr>
<tr>
<td>r2707 CO: Reference acceleration / Ref accel</td>
<td>Connector output of the reference quantity for accelerations p2007.</td>
<td>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.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**p2720[0...n]**  
**Load gear configuration / Load gear config**

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(1, 4) | Calculated: - | Access level: 1 |
| **Data type:** Unsigned32 | **Dyn. index:** DDS, p0180 | **Func. diagram:** 4704 |
| **P-Group:** Encoder | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |

**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

**p2721[0...n]**  
**Load gear rotary absolute encoder revolutions virtual / Abs rot rev**

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(1, 4) | Calculated: - | Access level: 1 |
| **Data type:** Unsigned32 | **Dyn. index:** DDS, p0180 | **Func. diagram:** 4704 |
| **P-Group:** Encoder | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |

**Description:**
Sets the number of rotations that can be resolved for a rotary absolute encoder with activated position tracking of the load gear.

**Dependency:**
This parameter is only of significance for an absolute encoder (p0404.1 = 1) with activated position tracking of the load gear (p2720.0 = 1).

**Note:**
- The resolution that is set must be able to be represented using r2723.
- This parameter is pre-set with p0421 when activating position tracking and can be changed.
- For rotary axes/modulo axes, the following applies:
  - This parameter is pre-assigned with p0421 when activating position tracking, expanded by 6 bits for multiturn information (maximum number of overflows) and cannot be changed.

**p2722[0...n]**  
**Load gear position tracking tolerance window / Pos track tol**

| DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | Can be changed: C2(1, 4) | Calculated: - | Access level: 3 |
| **Data type:** FloatingPoint32 | **Dyn. index:** DDS, p0180 | **Func. diagram:** - |
| **P-Group:** Encoder | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| Min | Max | Factory setting |

**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.

**Caution:**
Rotation, e.g. through a complete encoder range is not detected.
2 Parameters
2.2 List of parameters

Note:
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).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<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>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: Unsigned32</td>
<td>Notice: The encoder position actual value must be requested using the encoder control word Gn_STW.13.</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Not for motor type:</td>
<td>Note: The increments are displayed in the format as r0483.</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>r2724[0...n]</td>
<td>CO: Load gear position difference / Load gear pos diff</td>
<td>Displays the position difference before the load gear between powering down and powering up.</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: Integer32</td>
<td>Note: The increments are displayed in the same format as for r0483/r2723.</td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Not for motor type:</td>
<td>If the measuring gear of the motor encoder is not activated, the position difference should be read in encoder increments.</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>If the measuring gear of the motor encoder is activated, the position difference is converted using the measuring gear factor.</td>
</tr>
<tr>
<td>p2810[0...1]</td>
<td>BI: AND logic operation inputs / AND inputs</td>
<td>Sets the signal sources for the inputs of the AND logic operation.</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: Unsigned32 / Binary</td>
<td>Refer to: r2811</td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Not for motor type:</td>
<td>Note: [0]: AND logic operation, input 1 --&gt; the result is displayed in r2811.0.</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>[1]: AND logic operation, input 2 --&gt; the result is displayed in r2811.0.</td>
</tr>
<tr>
<td>r2811.0</td>
<td>CO/BO: AND logic operation result / AND result</td>
<td>Displays the result of the AND logic operation</td>
</tr>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>P-Group: Functions</td>
<td>Not for motor type:</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>Description: Displays the result of the AND logic operation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**2 Parameters**

### 2.2 List of parameters

#### p2816[0...1]
**BI: OR logic operation inputs / OR inputs**

<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></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2810

**Description:** Sets the signal sources for the inputs of the OR logic operation.

**Note:**
- [0]: OR logic operation, input 1 → the result is displayed in r2817.0.
- [1]: OR logic operation, input 2 → the result is displayed in r2817.0.

**Dependency:** Refer to: r2817

**Access level:** 2

**Func. diagram:** 2634

**Data type:** Unsigned32 / Binary

**Dyn. index:** -

**Unit group:** Functions

**Unit selection:** -

**Expert list:** 1

**Factory setting:** 0

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

Can be changed: T

Calculated: -

#### r2817.0
**CO/BO: OR logic operation result / OR result**

<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>OR logic operation result</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2816

**Description:** Displays the result of the OR logic operation.

**Access level:** 2

**Func. diagram:** 2634

**Data type:** Unsigned32

**Dyn. index:** -

**Unit group:** Functions

**Unit selection:** -

**Expert list:** 1

**Factory setting:** -

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

Can be changed: -

Calculated: -

#### p2900[0...n]
**CO: Fixed value 1 [%] / Fixed value 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></td>
<td>OR logic operation result</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2816

**Description:** Setting and connector output for a fixed percentage value.

**Access level:** 3

**Func. diagram:** -

**Data type:** FloatingPoint32

**Dyn. index:** DDS, p0180

**Unit group:** Free function blocks

**Unit selection:** -

**Expert list:** 1

**Factory setting:** 0.00 [%]

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

Can be changed: U, T

Calculated: -

#### p2901[0...n]
**CO: Fixed value 2 [%] / Fixed value 2 [%]**

<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>OR logic operation result</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p2816

**Description:** Setting and connector output for a fixed percentage value.

**Access level:** 3

**Func. diagram:** -

**Data type:** FloatingPoint32

**Dyn. index:** DDS, p0180

**Unit group:** Free function blocks

**Unit selection:** -

**Expert list:** 1

**Factory setting:** 0.00 [%]

**DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**

Can be changed: U, T

Calculated: -

**Notice:**
- 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)
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>r2902[0...14]</th>
<th>CO: Fixed values [%] / Fixed values [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Free function blocks</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>- [%]</td>
</tr>
<tr>
<td></td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for frequently used percentage values.</td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Fixed value +0 %</td>
</tr>
<tr>
<td></td>
<td>[14] = Fixed value -200 %</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2900, p2901, p2930</td>
</tr>
<tr>
<td>Note:</td>
<td>The signal sources can, for example, be used to interconnect scalings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p2930[0...n]</th>
<th>CO: Fixed value M [Nm] / Fixed value M [Nm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>DC_CTRL_R,</td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Free function blocks</td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: REL</td>
</tr>
<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>-100000.00 [Nm]</td>
</tr>
<tr>
<td></td>
<td>0.00 [Nm]</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Description:</td>
<td>Setting and connector output for a fixed torque value.</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p2900, p2901, r2902</td>
</tr>
<tr>
<td>Note:</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>Notice:</td>
<td>The value can, for example, be used to interconnect a supplementary torque.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p3100</th>
<th>RTC time stamp mode / RTC t_stamp mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R,</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>CU_DC_R_S,</td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>CU_DC_S</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>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Access level:</td>
<td>3</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the mode for the time stamp</td>
</tr>
<tr>
<td>p3100 = 0;</td>
<td>Time stamp, operating hours</td>
</tr>
<tr>
<td>p3100 = 1;</td>
<td>Time stamp, UTC format</td>
</tr>
<tr>
<td>p3100 = 2;</td>
<td>Time stamp, operating hours + 01.01.2000</td>
</tr>
<tr>
<td>Notice:</td>
<td>The realtime format (p3100 = 1), once selected, remains until the next time that the system is switched off. Switching back to operating hours (p3100 = 0) or operating hours + 01.01.2000 (p3100=2) is prevented.</td>
</tr>
<tr>
<td>Note:</td>
<td>RTC: Real-time clock</td>
</tr>
<tr>
<td>UTC: Universal Time Coordinates</td>
<td></td>
</tr>
<tr>
<td>The UTC time started, according to the definition on 01.01.1970 at 00:00:00 and is output in days and milliseconds.</td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Value</th>
<th>Access level</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3101[0...1]</td>
<td>RTC set UTC time / RTC set UTC</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>0</td>
<td>4294967295</td>
<td>0</td>
</tr>
<tr>
<td>p3102[0...1]</td>
<td>RTC read UTC time / RTC read UTC</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>p3103</td>
<td>RTC synchronization source / RTC sync_source</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>p3104</td>
<td>BI: RTC real time synchronization PING / RTC PING</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>-</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.
## Parameters

### 2.2 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>r3107[0...3]</td>
<td>RTC synchronizing time / RTC t_sync</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r3108[0...1]</td>
<td>RTC last synchronization deviation / RTC sync_dev</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p3109</td>
<td>RTC real time synchronization tolerance window / RTC sync tol</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit group: -</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3107[0, 1]: synchronizing event after synchronization
- r3107[0]: milliseconds
- r3107[1]: days

### 3107[2, 3]: synchronizing event before synchronization
- r3107[2]: milliseconds
- r3107[3]: days

### 3108[0...1]: RTC last synchronization deviation
- r3108[0]: Milliseconds
- r3108[1]: Days

### p3109 RTC real time synchronization tolerance window
- p3109[0]: 0 [ms] 1000 [ms] 100 [ms]

### p3110 External fault 3 power-up delay / Ext fault 3 t_on
- p3110[0]: 0 [ms] 1000 [ms] 0 [ms]

### p3111 External fault 3 power-up delay / Ext fault 3 t_on
- p3111[0]: 0 [ms] 1000 [ms] 0 [ms]

### Dependency
- Refer to: p2108, p3111, p3112
### 2 Parameters

#### 2.2 List of parameters

**p3111**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for the enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation:</th>
</tr>
</thead>
</table>
| BI (p3111) | - BI: p2108 negated  
- BI: p3111  
- BI: p3112 negated |

**Dependency:**

Refer to: p2108, p3110, p3112

**p3112**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for the negated enable signal of external fault 3. External fault 3 is initiated by the following AND logic operation:</th>
</tr>
</thead>
</table>
| BI (p3112) | - BI: p2108 negated  
- BI: p3111  
- BI: p3112 negated |

**Dependency:**

Refer to: p2108, p3110, p3112

---

**p3111[0...n]**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for the enable signal of external fault 3.</th>
</tr>
</thead>
</table>
| BI (p3111) | - BI: p2108 negated  
- BI: p3111  
- BI: p3112 negated |

**Dependency:**

Refer to: p2108, p3110, p3112

**p3112[0...n]**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source for the negated enable signal of external fault 3.</th>
</tr>
</thead>
</table>
| BI (p3112) | - BI: p2108 negated  
- BI: p3111  
- BI: p3112 negated |

**Dependency:**

Refer to: p2108, p3110, p3112
2 Parameters

2.2 List of parameters

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

<table>
<thead>
<tr>
<th>r3113.0...15</th>
<th>CO/BO: NAMUR message bit bar / NAMUR bit bar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All objects</strong></td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned16 Dy. index: - Func. diagram: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Messages Unit 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><strong>Max</strong></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and BICO output for the status of the NAMUR message bit bar.
The faults and alarms are assigned to the appropriate signaling/message classes and influence a specific message bit.

**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 converter information electronics/software error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Network fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DC link overvoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fault drive converter power electronics</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Drive converter overtemperature</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Ground fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Motor overload</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Bus error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>External safety-relevant shutdown</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Mot encoder fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Error communication internal</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Fault infeed</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Other faults</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
Re bit 00:
Hardware or software malfunction was identified. Carry out a POWER ON of the component involved. If it occurs again, contact the hotline.
Re bit 01:
A line supply fault has occurred (phase failure, voltage level, ...). Check the line supply / fuses. Check the supply voltage. Check the wiring.
Re bit 02:
The DC link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infeed settings.
Re bit 03:
An inadmissible operating state of the power electronics was identified (overcurrent, overtemperature, IGBT failure, ...). Check that the permissible load cycles are maintained. Check the ambient temperatures (fan).
Re bit 04:
The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet cooling.
Re bit 05:
A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cable (connection). Check the motor.
Re bit 06:
The motor was operated outside the permissible limits (temperature, current, torque, ...). Check the load cycles and limits that have been set. Check the ambient temperature / motor cooling.
Re bit 07:
The communication to the higher-level control system (internal coupling, PROFIBUS, PROFINET, ...) is faulted or interrupted. Check the state of the higher-level control system. Check the communication connection/wiring. Check the bus configuration / clock cycles.
Re bit 08:
A safety operation monitoring function (Safety) has detected an error.
2 Parameters

2.2 List of parameters

Re bit 09:
When evaluating the encoder signals (track signals, zero marks, absolute values, ...) an illegal signal state was detected. Check the encoder / state of the encoder signals. Observe the maximum frequencies.

Re bit 10:
The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant design. Observe the maximum permissible quantity structure / clock cycles.

Re bit 11:
The infeed is faulted or has failed. Check the infeed and the surroundings (line supply, filter, reactors, fuses, ...). Check the closed-loop infeed control.

Re bit 15:
Group fault. Determine the precise cause of the fault using the commissioning tool.

<table>
<thead>
<tr>
<th>r3114.9...11</th>
<th>CO/BO: Messages status word global / Msg ZSW global</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Displays, signals</td>
<td>Unit 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>
| - | - />

Description:
Displays the global status word for messages. The appropriate bit is set if at least one message is present at the drive objects.

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>09</td>
<td>Group alarm present</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>10</td>
<td>Group fault present</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>11</td>
<td>Safety group message present</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

Note:
The status bits are displayed with delay.

r3115[0...63] Fault drive object initiating / F DO initiating

<table>
<thead>
<tr>
<th>r3115[0...63]</th>
<th>Fault drive object initiating / F DO initiating</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer32</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit 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>
| - | - />

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.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p3116 BI: Acknowledgement automatically suppressed / Ackn suppress</td>
<td>Sets the signal source for the automatic acknowledgement on the device drive object.</td>
<td>3</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>BI: p3116 = 0 signal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Faults present are automatically acknowledged on the device drive object. Local device faults are forwarded to the first active drive object.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>BI: p3116 = 1 signal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faults present are not automatically acknowledged on the device drive object. Local device faults are not forwarded.</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: p2102, p2103, p2104, p2105, p3981</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Note: When selecting a standard telegram, the BICO interconnection for control signal STW1.10 (master control by PLC) is automatically established.</td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>r3120[0...63] Component fault / Comp fault</td>
<td>Displays the component of the fault which has occurred.</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>All objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>All objects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed:</td>
<td></td>
<td>Calculated:</td>
<td></td>
<td>Access level:</td>
<td>Func. diagram:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type:</td>
<td></td>
<td>Dyn. index:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Messages</td>
<td></td>
<td>Unit group:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td></td>
<td>Expert list:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
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<td></td>
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<td>-</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Refer to: r0945, r0947, r0948, r0949, r2109, r2130, r2133, r2136, r3122</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td>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.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>r3121[0...63] Component alarm / Comp alarm</td>
<td>Displays the component of the alarm which has occurred.</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>All objects</td>
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<tr>
<td></td>
<td>All objects</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed:</td>
<td></td>
<td>Calculated:</td>
<td></td>
<td>Access level:</td>
<td>Func. diagram:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type:</td>
<td></td>
<td>Dyn. index:</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>P-Group: Messages</td>
<td></td>
<td>Unit group:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td></td>
<td>Expert list:</td>
<td></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>Refer to: r2110, r2122, r2123, r2124, r2125, r2134, r2145, r2146, r3123</td>
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<tr>
<td></td>
<td>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.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>r3122[0...63] Diagnostic attribute fault / Diag_attr fault</td>
<td>Displays the diagnostic attribute of the fault which has occurred.</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
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<tr>
<td>All objects</td>
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<td>All objects</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed:</td>
<td></td>
<td>Calculated:</td>
<td></td>
<td>Access level:</td>
<td>Func. diagram:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type:</td>
<td></td>
<td>Dyn. index:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Messages</td>
<td></td>
<td>Unit group:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td></td>
<td>Scaling:</td>
<td></td>
<td>Expert list:</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Dependency:
Refer to: r0945, r0947, r0948, r0949, 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.

Re bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 → PROFIdrive message class 0: not assigned
Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 1 → PROFIdrive message class 1: hardware fault/software error
Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 → PROFIdrive message class 2: line fault
Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 → PROFIdrive message class 3: supply voltage fault
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 → PROFIdrive message class 4: DC link fault
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 → PROFIdrive message class 5: power electronics faulted
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 → PROFIdrive message class 6: overtemperature electronic components
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 → PROFIdrive message class 7: ground fault/phase fault detected
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 → PROFIdrive message class 8: motor overload
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 → PROFIdrive message class 9: communication error to the higher-level control
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 → PROFIdrive message class 10: safe monitoring channel has identified an error
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 → PROFIdrive message class 11: incorrect position actual value/speed actual value or not available
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 → PROFIdrive message class 12: internal (DRIVE-CLiQ) communication error
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 → PROFIdrive message class 13: infeed unit faulted
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 → PROFIdrive message class 14: braking controller/Braking Module faulted
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 → PROFIdrive message class 15: line filter faulted
Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 → PROFIdrive message class 16: external measured value/signal state outside the permissible range
Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 1 → PROFIdrive message class 17: application/technology function faulted
Bits 20, 19, 18, 17, 16 = 1, 1, 0, 1, 0 → PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence
Bits 20, 19, 18, 17, 16 = 1, 1, 0, 1, 1 → PROFIdrive message class 19: general drive fault

Diagnostic attribute alarm / Diag_attr 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>00</td>
<td>00</td>
<td>Hardware replacement recommended</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td>Alarm class bit 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>12</td>
<td>Alarm class bit 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>13</td>
<td>Maintenance required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>14</td>
<td>Maintenance urgently required</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>15</td>
<td>Message has gone</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>16</td>
<td>PROFIdrive fault class bit 0</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>17</td>
<td>PROFIdrive fault class bit 1</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>18</td>
<td>PROFIdrive fault class bit 2</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>19</td>
<td>PROFIdrive fault class bit 3</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>PROFIdrive fault class bit 4</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: r2110, r2122, r2123, r2124, r2125, r2130, r2133, r2136, r3121

r3123[0...63] Diagnostic attribute alarm / Diag_attr alarm

All objects

Can be changed: - Calculated: - Access level: 3
Data type: Unsigned32 Dyn. index: - Func. diagram: 8065
P-Group: Messages Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting -

Description:
Displays the diagnostic attribute of the alarm which has occurred.
2 Parameters

2.2 List of parameters

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.

Re bit 12, 11:
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.

Re bits 20 ... 16:

Bits 20, 19, 18, 17, 16 = 0, 0, 0, 0, 0 \(-\) PROFIdrive message class 0: not assigned
Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 0 \(-\) PROFIdrive message class 1: hardware fault/software error
Bits 20, 19, 18, 17, 16 = 0, 0, 0, 1, 1 \(-\) PROFIdrive message class 2: line fault
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 0 \(-\) PROFIdrive message class 4: DC link fault
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 0, 1 \(-\) PROFIdrive message class 5: power electronics faulted
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 0 \(-\) PROFIdrive message class 6: overtemperature electronic components
Bits 20, 19, 18, 17, 16 = 0, 0, 1, 1, 1 \(-\) PROFIdrive message class 7: ground fault/phase fault detected
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 0 \(-\) PROFIdrive message class 8: motor overload
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 0, 1 \(-\) PROFIdrive message class 9: communication error to the higher-level control
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 0 \(-\) PROFIdrive message class 10: safe monitoring channel has identified an error
Bits 20, 19, 18, 17, 16 = 0, 1, 0, 1, 1 \(-\) PROFIdrive message class 11: incorrect position actual value/speed actual value or not available
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 0 \(-\) PROFIdrive message class 12: internal (DRIVE-CLIQ) communication error
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 0, 1 \(-\) PROFIdrive message class 13: infeed unit faulted
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 0 \(-\) PROFIdrive message class 14: braking controller/Braking Module faulted
Bits 20, 19, 18, 17, 16 = 0, 1, 1, 1, 1 \(-\) PROFIdrive message class 15: line filter faulted
Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 0 \(-\) PROFIdrive message class 16: external measured value/signal state outside the permissible range
Bits 20, 19, 18, 17, 16 = 1, 0, 0, 0, 1 \(-\) PROFIdrive message class 17: application/technology function faulted
Bits 20, 19, 18, 17, 16 = 1, 0, 0, 1, 0 \(-\) PROFIdrive message class 18: error in the parameterization/configuration/commissioning sequence
Bits 20, 19, 18, 17, 16 = 1, 0, 1, 0, 1 \(-\) PROFIdrive message class 19: general drive fault

r3131 CO: Actual fault value / Act fault val

<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: Integer32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8060</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit 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>
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<td>-</td>
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</tr>
</tbody>
</table>

Description: Displays the fault value of the oldest active fault.

Dependency: Refer to: r2131, r3132

r3132 CO: Actual component number / Comp_no act

<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: Integer32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8060</td>
<td></td>
</tr>
<tr>
<td>P-Group: Messages</td>
<td>Unit 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>
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<tr>
<td>-</td>
<td>-</td>
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<td></td>
</tr>
</tbody>
</table>

Description: Displays the component number of the oldest fault that is still active.

Dependency: Refer to: r2131, r3131
**2 Parameters**

### 2.2 List of parameters

**p3135**

**Suppress active fault / Supp act flt**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Data type:** Unsigned32
- **P-Group:** Messages
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**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.

**r3770**

**CO: Load speed / n_load**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Data type:** FloatingPoint32
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**

Display and connector output for the load speed for APC (Advanced Positioning Control).

**Dependency:**

Refer to: r3771

**r3771[0...1]**

**CO: Load speed smoothed / n_load smooth**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Data type:** FloatingPoint32
- **P-Group:** Setpoints
- **Not for motor type:** -
- **Min:** - [rpm]
- **Max:** - [rpm]

**Description:**

Display and connector output for the speed actual values for APC (Advanced Positioning Control).

**Index:**

- Index 0:
  - Displays the smoothed load speed.
- Index 1:
  - Displays the load/motor speed actual value weighted with p3702 for p3700.8=1.

**Dependency:**

Refer to: p1441, r3770

**p3900**

**Completion of quick commissioning / Compl quick_comm**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Data type:** Integer16
- **P-Group:** Displays, signals
- **Not for motor type:** -
- **Min:** 0
- **Max:** 3

**Description:**

Exits quick commissioning (p0010 = 1) with automatic calculation of all parameters of all existing drive data sets that depend on the entries made during quick commissioning.
2 Parameters

2.2 List of parameters

p3900 = 3 only includes the calculations associated with the motor, open-loop and closed-loop control parameters corresponding to p0340 = 1.

**Value:**
- 0: No quick parameterization
- 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 zero.

<table>
<thead>
<tr>
<th>p3950</th>
<th>Service parameter / Serv par</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1, U, 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>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Value:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Notice:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Note:</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Description:</td>
<td>For service personnel only.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r3974</th>
<th>Drive unit status word / Drv_unit ZSW</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Value:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Notice:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Note:</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the status word for the drive unit.</td>
</tr>
</tbody>
</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>00</td>
<td>Software reset active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Writing of parameters disabled as parameter save in progress</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Writing of parameters disabled as macro is running</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r3977</th>
<th>BICO counter topology / BICO counter topo</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Value:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Notice:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Note:</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Description:</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>
</tr>
</tbody>
</table>

| Dependency: | Refer to: r3978, r3979 |

<table>
<thead>
<tr>
<th>r3978</th>
<th>BICO CounterDevice / BICO CounterDevice</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Min</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Value:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Notice:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Note:</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Description:</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>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r3979**  
**BICO counter drive object / BICO counter DO**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31**
- **Can be changed:** -  
- **Data type:** Unsigned32  
- **P-Group:** Commands  
- **Not for motor type:** -  
- **Min:** -  
- **Max:** -  
- **Factory setting:** -  

**Description:** Displays the counter reading for modified BICO interconnections on this drive object. The counter is incremented by one for each modified BICO interconnection.

**p3981**  
**Faults acknowledge drive object / Faults ackn DO**

- **All objects**  
- **Can be changed:** U, T  
- **Data type:** Unsigned8  
- **P-Group:** Messages  
- **Not for motor type:** -  
- **Min:** 0  
- **Max:** 1  
- **Factory setting:** 0  

**Description:** Setting to acknowledge all active faults of a drive object. Safety messages cannot be acknowledged using this parameter.

**Notice:** Parameter should be set from 0 to 1 to acknowledge. After acknowledgement, the parameter is automatically reset to 0.

**p3985**  
**Master control mode selection / PcCtrl mode select**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**  
- **Can be changed:** U, T  
- **Data type:** Integer16  
- **P-Group:** Setpoints  
- **Not for motor type:** -  
- **Min:** 0  
- **Max:** 1  
- **Factory setting:** 0  

**Description:** Sets the mode to change over the master control / LOCAL mode.

**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.

**r3986**  
**Parameter count / Parameter No.**

- **All objects**  
- **Can be changed:** -  
- **Data type:** Unsigned16  
- **P-Group:** -  
- **Not for motor type:** -  
- **Min:** -  
- **Max:** -  
- **Factory setting:** -  

**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
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>r3988[0...1]</th>
<th>Boot state / Boot_state</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
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<tr>
<td></td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
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<tr>
<td></td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Unit 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>
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<tr>
<td></td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Index 0:
Displays the boot state.

Index 1:
Displays the partial boot state

Value:
0: Not active
1: Fatal fault
10: Fault
20: Reset object modified
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
110: Instantiate Control Unit basis
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 for input of drive type
350: Determine drive type
360: Write into topology-dependent parameters
370: Wait until p0009 = 0 is set
380: Check topology
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
2 Parameters

2.2 List of parameters

r3996[0...1] Parameter write inhibit status / Par_write inhib st

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td></td>
<td>1</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Func. diagram:</th>
</tr>
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<tbody>
<tr>
<td>Unsigned8</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</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></td>
</tr>
</tbody>
</table>

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.

r4021 TM15DI/DO digital inputs terminal actual value / TM15D DI act val

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM15DI_DO</td>
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<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsigned32</td>
<td></td>
<td>9400, 9401, 9402</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commands</td>
<td></td>
<td></td>
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</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></td>
</tr>
</tbody>
</table>

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).

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/DO 0 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X520.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X520.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X520.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X521.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X521.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X521.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X521.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X521.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X521.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X521.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI/DO 16 (X522.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI/DO 17 (X522.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>DI/DO 18 (X522.4)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>DI/DO 19 (X522.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI/DO 20 (X522.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI/DO 21 (X522.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>DI/DO 22 (X522.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>DI/DO 23 (X522.9)</td>
<td>High</td>
<td>Low</td>
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</tr>
</tbody>
</table>

Note:
If a DI/DO is parameterized as output (p4028.x = 1), then r4021.x = 0 is displayed.
DI/DO: Bidirectional Digital Input/Output
### r4021

**TM31 digital inputs terminal actual value / TM31 DI act value**

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
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<td>2</td>
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**Data type:** Unsigned32  
**Dyn. index:** -  
**Func. diagram:** 9549, 9550, 9552, 9560, 9562

**P-Group:** Commands  
**Unit group:** -  
**Unit selection:** -

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

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

**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).

**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>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>High</td>
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<td>-</td>
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<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>
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<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
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</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...23

**CO/BO: TM15DI/DO digital inputs status / TM15D DI status**

<table>
<thead>
<tr>
<th>TM15DI_DO</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<td>1</td>
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</tbody>
</table>

**Data type:** Unsigned32  
**Dyn. index:** -  
**Func. diagram:** 9399, 9400, 9401, 9402

**P-Group:** Commands  
**Unit 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 15 (TM15).

**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/DO 0 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X520.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X520.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X520.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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<td>09</td>
<td>DI/DO 9 (X521.3)</td>
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<td>Low</td>
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<td>11</td>
<td>DI/DO 11 (X521.5)</td>
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<td>Low</td>
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<tr>
<td>13</td>
<td>DI/DO 13 (X521.7)</td>
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</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X521.8)</td>
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<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X521.9)</td>
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<td>Low</td>
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<td>16</td>
<td>DI/DO 16 (X522.2)</td>
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<tr>
<td>17</td>
<td>DI/DO 17 (X522.3)</td>
<td>High</td>
<td>Low</td>
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</tr>
<tr>
<td>18</td>
<td>DI/DO 18 (X522.4)</td>
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</tr>
<tr>
<td>19</td>
<td>DI/DO 19 (X522.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

| Dependency: | Refer to: r4023, r4024, r4025 |
| Notice: | For the BICO interconnection of the connector output (CO) only bit 00 ... 15 are transferred. |
| Note: | DI/DO: Bidirectional Digital Input/Output |

#### r4022.0...11 CO/BO: TM31 digital inputs status / TM31 DI status

| TM31 | Can be changed: - | Calculated: - | Access level: 1 |
| Data type: Unsigned32 | Dyn. index: - | Func. diagram: 9549, 9550, 9552, 9560, 9562 |
| P-Group: Commands | Unit 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).

<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>
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</tr>
<tr>
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<td>DI 2 (X520.3)</td>
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<td>DI 3 (X520.4)</td>
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<td>-</td>
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<td>DI 5 (X530.2)</td>
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<td>Low</td>
<td>-</td>
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</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>
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</tr>
<tr>
<td>08</td>
<td>DI 8 (X541.2)</td>
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<td>Low</td>
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<td>DI 9 (X541.3)</td>
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<td>-</td>
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<td>11</td>
<td>DI/DO 11 (X541.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
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</table>

**Dependency:**
Refer to: r4023

**Note:**
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

#### r4023.0...23 CO/BO: TM15DI/DO digital inputs status inverted / TM15D DI stat inv

| TM15D_DO | Can be changed: - | Calculated: - | Access level: 1 |
| Data type: Unsigned32 | Dyn. index: - | Func. diagram: 9399, 9400, 9401, 9402 |
| P-Group: Commands | Unit 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 15 (TM15).

<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/DO 0 (X520.2)</td>
<td>High</td>
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<td>-</td>
<td></td>
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<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
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<td>Low</td>
<td>-</td>
<td></td>
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<td>DI/DO 3 (X520.5)</td>
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<td>05</td>
<td>DI/DO 5 (X520.7)</td>
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<td>-</td>
<td></td>
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<tr>
<td>06</td>
<td>DI/DO 6 (X520.8)</td>
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<td>Low</td>
<td>-</td>
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<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>High</td>
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<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
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<td>-</td>
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<td>09</td>
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</tr>
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<td>10</td>
<td>DI/DO 10 (X521.4)</td>
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<tr>
<td>11</td>
<td>DI/DO 11 (X521.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
<td></td>
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<td>12</td>
<td>DI/DO 12 (X521.6)</td>
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<td></td>
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<td>13</td>
<td>DI/DO 13 (X521.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
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</table>
### 2.2 List of parameters

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<th>DI/DO Signal Name</th>
<th>Signal State</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
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<td>Low</td>
<td>-</td>
<td>-</td>
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<td>Low</td>
<td>-</td>
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<tr>
<td>22</td>
<td>DI/DO 22 (X522.8)</td>
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<td>Low</td>
<td>-</td>
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<td>DI/DO 23 (X522.9)</td>
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<td>-</td>
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</table>

**Dependency:** Refer to: r4022, r4024, r4025

**Notice:** For the BICO interconnection of the connector output (CO) only bit 00 ... 15 are transferred.

**Note:** DI/DO: Bidirectional Digital Input/Output

---

**r4023.0...11 CO/BO: TM31 digital inputs status inverted / TM31 DI status inv**

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<thead>
<tr>
<th>TM31</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Func. diagram:</th>
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</tbody>
</table>

**P-Group:** Commands

**Unit group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**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 1</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
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<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>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X530.2)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X530.3)</td>
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<td>Low</td>
<td>-</td>
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<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>High</td>
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<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
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<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
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<td>DI/DO 10 (X541.4)</td>
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</table>

**Dependency:** Refer to: r4022

**Note:** DI: Digital Input

DI/DO: Bidirectional Digital Input/Output

---

**r4024 CO: TM15DI/DO digital inputs 16 ... 23 status / TM15D DI 16-23 St**

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<th>Access level:</th>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Func. diagram:</th>
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**P-Group:** Commands

**Unit group:** -

**Not for motor type:** -

**Scaling:** -

**Expert list:** 1

**Description:** Displays the status of digital inputs 16 ... 23 of Terminal Module 15 (TM15).

**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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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 17 (X522.3)</td>
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<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 18 (X522.4)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 19 (X522.5)</td>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 20 (X522.6)</td>
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<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 21 (X522.7)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
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<td>06</td>
<td>DI/DO 22 (X522.8)</td>
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</tr>
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<td>07</td>
<td>DI/DO 23 (X522.9)</td>
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<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4022, r4023, r4025
### 2 Parameters

#### 2.2 List of parameters

**Note:**

DI: Digital Input

---

#### r4025 CO: TM15DI/DO digital inputs 16 ... 23 status inverted / TM15DI 16-23 inv

**Description:** Displays the inverted status of digital inputs 16 ... 23 of Terminal Module 15 (TM15).

**Dependency:** Refer to: r4022, r4023, r4024

**Note:**

DI: Digital Input

**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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<td>-</td>
</tr>
<tr>
<td>01</td>
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<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 18 (X522.4)</td>
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<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 19 (X522.5)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
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</tr>
<tr>
<td>05</td>
<td>DI/DO 21 (X522.7)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 22 (X522.8)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 23 (X522.9)</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: r4022, r4023, r4024

**Note:**

DI: Digital Input

---

#### p4028 TM15DI/DO set input or output / TM15DI or DO

**Description:** Sets the bidirectional digital inputs/outputs on the Terminal Module 15 (TM15) as input or output.

**Dependency:**

Refer to: TM15DI/DO set input or output / TM15DI or DO

**Note:**

DI/DO: Bidirectional Digital Input/Output

**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/DO 0 (X520.2)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
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<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
<td>Output</td>
<td>Input</td>
<td>-</td>
</tr>
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<td>DI/DO 7 (X520.9)</td>
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<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
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<td>Input</td>
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<td>DI/DO 10 (X521.4)</td>
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<td>DI/DO 11 (X521.5)</td>
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<td>12</td>
<td>DI/DO 12 (X521.6)</td>
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<td>DI/DO 13 (X521.7)</td>
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<td>DI/DO 14 (X521.8)</td>
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<td>15</td>
<td>DI/DO 15 (X521.9)</td>
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<td>DI/DO 16 (X522.2)</td>
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<td>DI/DO 17 (X522.3)</td>
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<td>DI/DO 18 (X522.4)</td>
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<td>DI/DO 19 (X522.5)</td>
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<td>DI/DO 20 (X522.6)</td>
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<td>DI/DO 21 (X522.7)</td>
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<td>22</td>
<td>DI/DO 22 (X522.8)</td>
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<td>23</td>
<td>DI/DO 23 (X522.9)</td>
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### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>p4028</strong></td>
<td><strong>TM31 set input or output / TM31 DI or DO</strong></td>
</tr>
<tr>
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<td><strong>Not for motor type</strong>: -</td>
<td>Scaling: -</td>
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<td><strong>Min</strong>: Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Description</strong>:</td>
<td>Sets the bidirectional digital inputs/outputs as input or output on the Terminal Module 31 (TM31).</td>
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<tr>
<td><strong>Bit field</strong>: Bit</td>
<td>Signal name</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</td>
</tr>
<tr>
<td><strong>Note</strong>:</td>
<td>Di/DO: Bidirectional Digital Input/Output</td>
</tr>
<tr>
<td><strong>p4030</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 0 / TM15D s_srcDI/DO 0</strong></td>
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<tr>
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<tr>
<td><strong>Description</strong>:</td>
<td>Sets the signal source for terminal DI/DO 0 (X520.2) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td><strong>Note</strong>:</td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.0 = 1).</td>
</tr>
<tr>
<td><strong>p4030</strong></td>
<td><strong>BI: TM31 signal source for terminal DO 0 / TM31 s s DO 0</strong></td>
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<td></td>
</tr>
<tr>
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<td><strong>P-Group</strong>: Commands</td>
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<td><strong>Min</strong>: Max</td>
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</tr>
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<td>-</td>
</tr>
<tr>
<td><strong>Description</strong>:</td>
<td>Sets the signal source for the digital output DO 0 (X542.1, X542.2, X542.3) of Terminal Module 31 (TM31).</td>
</tr>
<tr>
<td><strong>Note</strong>:</td>
<td>Digital Output</td>
</tr>
<tr>
<td><strong>p4031</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 1 / TM15D s_src DI/DO1</strong></td>
</tr>
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<td><strong>Can be changed</strong>: U, T</td>
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<td><strong>P-Group</strong>: Commands</td>
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<td><strong>Not for motor type</strong>: -</td>
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<td><strong>Min</strong>: Max</td>
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<tr>
<td><strong>Description</strong>:</td>
<td>Sets the signal source for terminal DI/DO 1 (X520.3) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td><strong>Note</strong>:</td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.1 = 1).</td>
</tr>
<tr>
<td><strong>p4031</strong></td>
<td><strong>DI/DO: Bidirectional Digital Input/Output</strong></td>
</tr>
</tbody>
</table>

---

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2 Parameters

2.2 List of parameters

**p4031**

**BI: TM31 signal source for terminal DO 1 / TM31 s s DO 1**

- **TM31**
  - Can be changed: U, T  
  - Calculated: -  
  - Access level: 1
- **Data type:** Unsigned32 / Binary  
- **P-Group:** Commands  
- **Not for motor type:** -  
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the signal source for the 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).

**Note:**
- **DO:** Digital Output
- **NC:** Normally Closed contact
- **NO:** Normally Open contact

**p4032**

**BI: TM15DI/DO signal source for terminal DI/DO 2 / TM15D s_src DI/DO2**

- **TM15DI_DO**
  - Can be changed: U, T  
  - Calculated: -  
  - Access level: 1
- **Data type:** Unsigned32 / Binary  
- **P-Group:** Commands  
- **Not for motor type:** -  
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the signal source for the terminal DI/DO 2 (X520.4) of Terminal Module 15 (TM15).

**Note:**
- **Prerequisite:** The DI/DO must be set as an output (p4028.2 = 1).
- **DI/DO:** Bidirectional Digital Input/Output

**p4033**

**BI: TM15DI/DO signal source for terminal DI/DO 3 / TM15D s_src DI/DO3**

- **TM15DI_DO**
  - Can be changed: U, T  
  - Calculated: -  
  - Access level: 1
- **Data type:** Unsigned32 / Binary  
- **P-Group:** Commands  
- **Not for motor type:** -  
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the signal source for the terminal DI/DO 3 (X520.5) of Terminal Module 15 (TM15).

**Note:**
- **Prerequisite:** The DI/DO must be set as an output (p4028.3 = 1).
- **DI/DO:** Bidirectional Digital Input/Output

**p4034**

**BI: TM15DI/DO signal source for terminal DI/DO 4 / TM15D s_src DI/DO4**

- **TM15DI_DO**
  - Can be changed: U, T  
  - Calculated: -  
  - Access level: 1
- **Data type:** Unsigned32 / Binary  
- **P-Group:** Commands  
- **Not for motor type:** -  
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the signal source for the terminal DI/DO 4 (X520.6) of Terminal Module 15 (TM15).

**Note:**
- **Prerequisite:** The DI/DO must be set as an output (p4028.4 = 1).
- **DI/DO:** Bidirectional Digital Input/Output
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
<th>Unit group</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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<tbody>
<tr>
<td>p4035</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 5 / TM15D s_src DI/DO5</td>
<td>Sets the signal source for terminal DI/DO 5 (X520.7) of Terminal Module 15 (TM15).</td>
<td>Commands</td>
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<td>p4036</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 6 / TM15D s_src DI/DO6</td>
<td>Sets the signal source for terminal DI/DO 6 (X520.8) of Terminal Module 15 (TM15).</td>
<td>Commands</td>
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<td>p4037</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 7 / TM15D s_src DI/DO7</td>
<td>Sets the signal source for terminal DI/DO 7 (X520.9) of Terminal Module 15 (TM15).</td>
<td>Commands</td>
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<td>p4038</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 8 / TM15D s_src DI/DO8</td>
<td>Sets the signal source for terminal DI/DO 8 (X521.2) of terminal module 15 (TM15).</td>
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### 2 Parameters

#### 2.2 List of parameters

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<td>-</td>
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<tr>
<td>Factory setting</td>
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<td>Description:</td>
<td>Sets the signal source for terminal DI/DO 8 (X541.2) of Terminal Module 31 (TM31).</td>
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<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.8 = 1). DI/DO: Bidirectional Digital Input/Output</td>
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<td>P-Group: Commands</td>
<td>Unit group: -</td>
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<td>Not for motor type:</td>
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<td>-</td>
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<td>Factory setting</td>
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<tr>
<td>Description:</td>
<td>Sets the signal source for terminal DI/DO 9 (X521.3) of Terminal Module 15 (TM15).</td>
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<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.9 = 1). DI/DO: Bidirectional Digital Input/Output</td>
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<td>P-Group: Commands</td>
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<td>Not for motor type:</td>
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<tr>
<td>Factory setting</td>
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<tr>
<td>Description:</td>
<td>Sets the signal source for terminal DI/DO 9 (X541.3) of Terminal Module 31 (TM31).</td>
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<tr>
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<td>Prerequisite: The DI/DO must be set as an output (p4028.9 = 1). DI/DO: Bidirectional Digital Input/Output</td>
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<th><strong>p4040</strong></th>
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<td>P-Group: Commands</td>
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</tr>
<tr>
<td>Factory setting</td>
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<tr>
<td>Description:</td>
<td>Sets the signal source for terminal DI/DO 10 (X521.4) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td>Note:</td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.10 = 1). DI/DO: Bidirectional Digital Input/Output</td>
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</table>
### 2 Parameters

#### 2.2 List of parameters

**p4040**  
**BI: TM31 signal source for terminal DI/DO 10 / TM31 S_src DI/DO10**

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<tr>
<th>TM31</th>
<th>Can be changed: U, T</th>
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<td>Max</td>
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**Description:** Sets the signal source for terminal DI/DO 10 (X541.4) of Terminal Module 31 (TM31).

**Note:** Prerequisite: The DI/DO must be set as an output (p4028.10 = 1).

**DI/DO: Bidirectional Digital Input/Output**

**p4041**  
**BI: TM15DI/DO signal source for terminal DI/DO 11 / TM15 s_srcDI/DO11**

<table>
<thead>
<tr>
<th>TM15DI_DO</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
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<td>P-Group: Commands</td>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
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</table>

**Description:** Sets the signal source for terminal DI/DO 11 (X521.5) of Terminal Module 15 (TM15).

**Note:** Prerequisite: The DI/DO must be set as an output (p4028.11 = 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>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
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<tr>
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</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**

**p4042**  
**BI: TM15DI/DO signal source for terminal DI/DO 12 / TM15 s_srcDI/DO12**

<table>
<thead>
<tr>
<th>TM15DI_DO</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>Dyn. index: -</td>
<td>Func. diagram: 9401</td>
<td></td>
</tr>
<tr>
<td>P-Group: Commands</td>
<td>Unit 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 12 (X521.6) of Terminal Module 15 (TM15).

**Note:** Prerequisite: The DI/DO must be set as an output (p4028.12 = 1).

**DI/DO: Bidirectional Digital Input/Output**
## Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
<th>Value</th>
<th>Dependency</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4043</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 13 / TM15 s_srcDI/DO13</td>
<td>Sets the signal source for terminal DI/DO 13 (X521.7) of Terminal Module 15 (TM15).</td>
<td></td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.13 = 1).</td>
<td></td>
</tr>
<tr>
<td>p4044</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 14 / TM15 s_srcDI/DO14</td>
<td>Sets the signal source for terminal DI/DO 14 (X521.8) of Terminal Module 15 (TM15).</td>
<td></td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.14 = 1).</td>
<td></td>
</tr>
<tr>
<td>p4045</td>
<td>BI: TM15DI/DO signal source for terminal DI/DO 15 / TM15 s_srcDI/DO15</td>
<td>Sets the signal source for terminal DI/DO 15 (X521.9) of Terminal Module 15 (TM15).</td>
<td></td>
<td>Prerequisite: The DI/DO must be set as an output (p4028.15 = 1).</td>
<td></td>
</tr>
<tr>
<td>p4046</td>
<td>TM31 digital outputs limit current / TM31 DO limit curr</td>
<td>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).</td>
<td>0: 0.1 A total current limit DI/DO 8 ... 11</td>
<td>Refer to: p4028</td>
<td>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.</td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

r4047  TM15Di/DO digital outputs status / TM15 DO status

**TM15Di/DO**

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

**Data type:** Unsigned32

- Dyn. index: -
- Func. diagram: 9400, 9401, 9402

**P-Group:** Commands

- Unit group: -
- Unit selection: -

**Not for motor type:** -

**Scaling:** -

**Min**

- Max

**Expert list:** 1

**Factory setting**

Description:
Displays the status of the digital outputs of Terminal Module 15 (TM15).

**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/Do 0 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Di/Do 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Di/Do 2 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Di/Do 3 (X520.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Di/Do 4 (X520.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Di/Do 5 (X520.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Di/Do 6 (X520.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Di/Do 7 (X520.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Di/Do 8 (X521.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Di/Do 9 (X521.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Di/Do 10 (X521.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Di/Do 11 (X521.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Di/Do 12 (X521.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Di/Do 13 (X521.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Di/Do 14 (X521.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Di/Do 15 (X521.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>Di/Do 16 (X522.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>Di/Do 17 (X522.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>Di/Do 18 (X522.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>Di/Do 19 (X522.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>Di/Do 20 (X522.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>Di/Do 21 (X522.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>Di/Do 22 (X522.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>Di/Do 23 (X522.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**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).

Di/Do: Bidirectional Digital Input/Output

r4047  TM31 digital outputs status / TM31 DO status

**TM31**

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

**Data type:** Unsigned32

- Dyn. index: -
- Func. diagram: 9556, 9560, 9562

**P-Group:** Commands

- Unit group: -
- Unit selection: -

**Not for motor type:** -

**Scaling:** -

**Min**

- Max

**Expert list:** 1

**Factory setting**

Description:
Displays the status of the digital outputs 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>DO 0 (X542.1 - 3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X542.4 - 6)</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>

**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).

Di/Do: Digital Output

Di/Do: Bidirectional Digital Input/Output
### 2 Parameters

#### 2.2 List of parameters

**p4048**

**TM15Di/DO invert digital outputs / TM15D DO inv**

| Description: | Setting to invert the signals at the digital outputs of Terminal Module 15 (TM15). |
| Bit field: | Bit | Signal name | 1 signal | 0 signal | FP |
| | 00 | DI/DO 0 (X520.2) | Inverted | Not inverted | - |
| | 01 | DI/DO 1 (X520.3) | Inverted | Not inverted | - |
| | 02 | DI/DO 2 (X520.4) | Inverted | Not inverted | - |
| | 03 | DI/DO 3 (X520.5) | Inverted | Not inverted | - |
| | 04 | DI/DO 4 (X520.6) | Inverted | Not inverted | - |
| | 05 | DI/DO 5 (X520.7) | Inverted | Not inverted | - |
| | 06 | DI/DO 6 (X520.8) | Inverted | Not inverted | - |
| | 07 | DI/DO 7 (X520.9) | Inverted | Not inverted | - |
| | 08 | DI/DO 8 (X521.2) | Inverted | Not inverted | - |
| | 09 | DI/DO 9 (X521.3) | Inverted | Not inverted | - |
| | 10 | DI/DO 10 (X521.4) | Inverted | Not inverted | - |
| | 11 | DI/DO 11 (X521.5) | Inverted | Not inverted | - |
| | 12 | DI/DO 12 (X521.6) | Inverted | Not inverted | - |
| | 13 | DI/DO 13 (X521.7) | Inverted | Not inverted | - |
| | 14 | DI/DO 14 (X521.8) | Inverted | Not inverted | - |
| | 15 | DI/DO 15 (X521.9) | Inverted | Not inverted | - |
| | 16 | DI/DO 16 (X522.2) | Inverted | Not inverted | - |
| | 17 | DI/DO 17 (X522.3) | Inverted | Not inverted | - |
| | 18 | DI/DO 18 (X522.4) | Inverted | Not inverted | - |
| | 19 | DI/DO 19 (X522.5) | Inverted | Not inverted | - |
| | 20 | DI/DO 20 (X522.6) | Inverted | Not inverted | - |
| | 21 | DI/DO 21 (X522.7) | Inverted | Not inverted | - |
| | 22 | DI/DO 22 (X522.8) | Inverted | Not inverted | - |
| | 23 | DI/DO 23 (X522.9) | Inverted | Not inverted | - |

**Note:**
- DI/DO: Bidirectional Digital Input/Output

**p4048**

**TM31 invert digital outputs / TM31 DO inv**

| Description: | Setting to invert the signals at the digital outputs of Terminal Module 31 (TM31). |
| Bit field: | Bit | Signal name | 1 signal | 0 signal | FP |
| | 00 | DO 0 (X542.1 - 3) | Inverted | Not inverted | - |
| | 01 | DO 1 (X542.4 - 6) | Inverted | Not inverted | - |
| | 08 | DI/DO 8 (X541.2) | Inverted | Not inverted | - |
| | 09 | DI/DO 9 (X541.3) | Inverted | Not inverted | - |
| | 10 | DI/DO 10 (X541.4) | Inverted | Not inverted | - |
| | 11 | DI/DO 11 (X541.5) | Inverted | Not inverted | - |

**Note:**
- DO: Digital Output
- DI/DO: Bidirectional Digital Input/Output
2 Parameters
2.2 List of parameters

**r4052[0...1]**

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: TM31 analog inputs current input voltage/current / TM31 AI U/I_inp</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Can be changed: -  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting:</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: 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.

Index: 

- [0] = AI 0 (X521.1/X521.2, S5.0)
- [1] = AI 1 (X521.3/X521.4, S5.1)

Dependency: The type of analog input AI x (voltage or current input) is set using p4056.
Refer to: p4056

Note: AI: Analog Input

**p4053[0...1]**

<table>
<thead>
<tr>
<th>Description</th>
<th>TM31 analog inputs smoothing time constant / TM31 AI T_smooth</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Can be changed: U, T  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting:</td>
<td>-</td>
</tr>
<tr>
<td>0.0 [ms]</td>
<td>1000.0 [ms]</td>
</tr>
<tr>
<td>0.0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the smoothing time constant of the 1st-order low pass filter for 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)

Note: AI: Analog Input

**r4055[0...1]**

<table>
<thead>
<tr>
<th>Description</th>
<th>CO: TM31 analog inputs actual value in percent / TM31 AI value in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Can be changed: -  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>Expert setting:</td>
<td>-</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<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

**p4056[0...1]**

<table>
<thead>
<tr>
<th>Description</th>
<th>TM31 analog inputs type / TM31 AI type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Can be changed: U, T  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Terminals</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting:</td>
<td>-</td>
</tr>
<tr>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>4</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.
2 Parameters

2.2 List of parameters

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:**
For 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 %.

**p4057[0...1]**

**TM31 analog inputs characteristic value x1 / TM31 AI char x1**

**TM31**
- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 9566, 9568
- P-Group: Terminals
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1

**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

**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.

**p4058[0...1]**

**TM31 analog inputs characteristic value y1 / TM31 AI char y1**

**TM31**
- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 9566, 9568
- P-Group: Terminals
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1

**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.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4059[0...1]</strong></td>
<td><strong>TM31 analog inputs characteristic value x2 / TM31 AI char x2</strong></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9566, 9568</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></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>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-20.000</td>
<td>20.000</td>
<td>10.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 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: 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]** | **TM31 analog inputs characteristic value y2 / TM31 AI char y2** | Can be changed: U, T | Calculated: - | Access level: 2 | |
| Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: 9566, 9568 |
| P-Group: Terminals | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| -1000.00 [%] | 1000.00 [%] | 100.00 [%] |

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** | Can be changed: U, T | Calculated: - | Access level: 2 | |
| Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: 9566, 9568 |
| P-Group: Terminals | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0.00 [mA] | 20.00 [mA] | 2.00 [mA] |

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: p4056
### 2 Parameters

#### 2.2 List of parameters

**p4062[0...1] TM31 analog inputs wire breakage monitoring delay time / TM31 wirebrk t_del**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the delay time for wire-breakage monitoring of the analog inputs on Terminal Module 31 (TM31).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>[0] = AI 0 (X521.1/X521.2, S5.0) [1] = AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>

**p4063[0...1] TM31 analog inputs offset / TM31 AI offset**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the offset for the analog inputs of Terminal Module 31 (TM31). The offset is added to the input signal before the scaling characteristic.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>[0] = AI 0 (X521.1/X521.2, S5.0) [1] = AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>

**p4066[0...1] TM31 analog inputs activate absolute value generation / TM31 AI absVal act**

<table>
<thead>
<tr>
<th>Description</th>
<th>Activates the absolute value generation for the analog input signals of Terminal Module 31 (TM31).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td>[0]: No absolute value generation [1]: Absolute value generation switched in</td>
</tr>
<tr>
<td>Index</td>
<td>[0] = AI 0 (X521.1/X521.2, S5.0) [1] = AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>

**p4067[0...1] BI: TM31 analog inputs invert signal source / TM31 AI inv s s**

<table>
<thead>
<tr>
<th>Description</th>
<th>Sets the signal source to invert the analog inputs signals of Terminal Module 31 (TM31).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index</td>
<td>[0] = AI 0 (X521.1/X521.2, S5.0) [1] = AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4068[0...1]</td>
<td><strong>TM31 analog inputs window to suppress noise / TM31 AI window</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9566, 9568</td>
</tr>
<tr>
<td></td>
<td>P-Group: Terminals</td>
<td>Unit 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>0.00 [%]</td>
<td>20.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the noise suppression window of the analog inputs for Terminal Module 31 (TM31).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></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>
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<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AI: Analog Input</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4069[0...1]</td>
<td><strong>BI: TM31 analog inputs signal source for enable / TM31 AI enable</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9566, 9568</td>
</tr>
<tr>
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<td>P-Group: Terminals</td>
<td>Unit 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>
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<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the signal source for the enable signal of the analog inputs of Terminal Module 31 (TM31).</td>
<td></td>
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<tr>
<td></td>
<td><strong>Index:</strong></td>
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<td></td>
</tr>
<tr>
<td></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>
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<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>p4071[0...1]</td>
<td><strong>CI: TM31 analog outputs signal source / TM31 AO signal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9549, 9572</td>
</tr>
<tr>
<td></td>
<td>P-Group: Terminals</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sets the signal source for the analog outputs of Terminal Module 31 (TM31).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0] = AO 0 (X522.1, X522.2, X522.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = AO 1 (X522.4, X522.5, X522.6)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td><strong>Note:</strong></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>AO: Analog Output</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4072[0...1]</td>
<td><strong>TM31 analog outputs output value currently referred / TM31 AO outp_val</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9572</td>
</tr>
<tr>
<td></td>
<td>P-Group: Terminals</td>
<td>Unit 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>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Displays the actual referred output value of the analog outputs of Terminal Module 31 (TM31).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[0] = AO 0 (X522.1, X522.2, X522.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>[1] = AO 1 (X522.4, X522.5, X522.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.2 List of parameters

### p4073[0...1]
**TM31 analog outputs smoothing time constant / TM31 AO T_smooth**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** 0.0 [ms]
- **Max:** 1000.0 [ms]
- **Factory setting:** 0.0 [ms]

**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]
**TM31 analog outputs current output voltage/current / TM31 AO U/I_outp**

- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Factory setting:** -

**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: p4076

**Note:**
- AO: Analog Output

### p4075[0...1]
**TM31 analog outputs activate absolute value generation / TM31 AO absVal act**

- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**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)

### p4076[0...1]
**TM31 analog outputs type / TM31 AO type**

- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Terminals
- **Not for motor type:** -
- **Min:** 0
- **Max:** 4
- **Factory setting:** 4

**Description:**
Sets the type of analog outputs of Terminal Module 31 (TM31).

- p4076[x] = 1, 4 correspond to a voltage output (p4074, p4078, p4080, p4083 are displayed in V).
- p4076[x] = 0, 2, 3 correspond to a current output (p4074, p4078, p4080, p4083 are displayed in mA).

**Value:**
- 0: Current output (0 mA ... +20 mA)
- 1: Voltage output (0 V ... +10 V)
- 2: Current output (+4 mA ... +20 mA)
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Index:</th>
<th>Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0] = AO 0 (X522.1, X522.2, X522.3)</td>
<td>Current output (-20 mA ... +20 mA)</td>
</tr>
<tr>
<td>[1] = AO 1 (X522.4, X522.5, X522.6)</td>
<td>Voltage output (-10 V ... +10 V)</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p4077, p4078, p4079, 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.

### 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).

The scaling characteristic for the analog outputs is defined using 2 points. This parameter specifies the x coordinate (percentage) of the 1st value pair of the characteristic.

**Index:** [0] = AO 0 (X522.1, X522.2, X522.3)

-1000.00 [%] 1000.00 [%] 0.00 [%]

**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.

### 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).

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)

-20.000 [V] 20.000 [V] 0.00 [V]

**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.

### p4079[0...1] TM31 analog outputs characteristic value x2 / TM31 AO char x2

**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.

**Index:** [0] = AO 0 (X522.1, X522.2, X522.3)

-1000.00 [%] 1000.00 [%] 100.00 [%]
This parameter specifies the x coordinate (percentage) 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: 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.

### p4080[0...1]  TM31 analog outputs characteristic value y2 / TM31 AO char y2

**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: 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.

### p4082[0...1]  BI: TM31 analog outputs invert signal source / TM31 AO inv s s

**Description:**
Sets the signal source to invert 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)

Dependency: The unit of this parameter (V or mA) depends on the analog output type. 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.

### p4083[0...1]  TM31 analog outputs offset / TM31 AO offset

**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: p4076
Note: This means, for example, the offset of a downstream isolating amplifier can be compensated.
2 Parameters
2.2 List of parameters

### p4086
**BI: TM15DI/DO signal source for terminal DI/DO 16 / TM15D s_srcDi/Do16**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Calculated</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Can be changed</th>
<th>Dyn. index</th>
<th>Unit selection</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the signal source for terminal DI/DO 16 (X522.2) of Terminal Module 15 (TM15).</td>
<td><strong>Note:</strong> Prerequisite: The DI/DO must be set as an output (p4028.16 = 1).</td>
<td><strong>DI/DO:</strong> Bidirectional Digital Input/Output</td>
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</tr>
</tbody>
</table>

### p4087
**BI: TM15DI/DO signal source for terminal DI/DO 17 / TM15D s_srcDi/Do17**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Calculated</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Can be changed</th>
<th>Dyn. index</th>
<th>Unit selection</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the signal source for terminal DI/DO 17 (X522.3) of Terminal Module 15 (TM15).</td>
<td><strong>Note:</strong> Prerequisite: The DI/DO must be set as an output (p4028.17 = 1).</td>
<td><strong>DI/DO:</strong> Bidirectional Digital Input/Output</td>
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</tr>
</tbody>
</table>

### p4088
**BI: TM15DI/DO signal source for terminal DI/DO 18 / TM15D s_srcDi/Do18**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Calculated</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Can be changed</th>
<th>Dyn. index</th>
<th>Unit selection</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the signal source for terminal DI/DO 18 (X522.4) of Terminal Module 15 (TM15).</td>
<td><strong>Note:</strong> Prerequisite: The DI/DO must be set as an output (p4028.18 = 1).</td>
<td><strong>DI/DO:</strong> Bidirectional Digital Input/Output</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### p4089
**BI: TM15DI/DO signal source for terminal DI/DO 19 / TM15D s_srcDi/Do19**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Calculated</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Can be changed</th>
<th>Dyn. index</th>
<th>Unit selection</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Description:</strong> Sets the signal source for terminal DI/DO 19 (X522.5) of Terminal Module 15 (TM15).</td>
<td><strong>Note:</strong> Prerequisite: The DI/DO must be set as an output (p4028.19 = 1).</td>
<td><strong>DI/DO:</strong> Bidirectional Digital Input/Output</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4090</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 20 / TM15D s_srcDI/DO20</strong></td>
<td>Sets the signal source for terminal DI/DO 20 (X522.6) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td><strong>p4091</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 21 / TM15D s_srcDI/DO21</strong></td>
<td>Sets the signal source for terminal DI/DO 21 (X522.7) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td><strong>p4092</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 22 / TM15D s_srcDI/DO22</strong></td>
<td>Sets the signal source for terminal DI/DO 22 (X522.8) of Terminal Module 15 (TM15).</td>
</tr>
<tr>
<td><strong>p4093</strong></td>
<td><strong>BI: TM15DI/DO signal source for terminal DI/DO 23 / TM15D s_srcDI/DO23</strong></td>
<td>Sets the signal source for terminal DI/DO 23 (X522.9) of Terminal Module 15 (TM15).</td>
</tr>
</tbody>
</table>

**TM15DI_DO**

**Can be changed:** U, T  
**Calculated:** -  
**Access level:** 1  
**Data type:** Unsigned32 / Binary  
**Dyn. index:** -  
**Func. diagram:** 9402  
**P-Group:** Commands  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  

**Description:**  
Sets the signal source for terminal DI/DO 20 (X522.6) of Terminal Module 15 (TM15).  
**Note:**  
Prerequisite: The DI/DO must be set as an output (p4028.20 = 1).  
DI/DO: Bidirectional Digital Input/Output  

**Description:**  
Sets the signal source for terminal DI/DO 21 (X522.7) of Terminal Module 15 (TM15).  
**Note:**  
Prerequisite: The DI/DO must be set as an output (p4028.21 = 1).  
DI/DO: Bidirectional Digital Input/Output  

**Description:**  
Sets the signal source for terminal DI/DO 22 (X522.8) of Terminal Module 15 (TM15).  
**Note:**  
Prerequisite: The DI/DO must be set as an output (p4028.22 = 1).  
DI/DO: Bidirectional Digital Input/Output  

**Description:**  
Sets the signal source for terminal DI/DO 23 (X522.9) of Terminal Module 15 (TM15).  
**Note:**  
Prerequisite: The DI/DO must be set as an output (p4028.23 = 1).  
DI/DO: Bidirectional Digital Input/Output
# Parameters

## 2.2 List of parameters

### r4094.0...23

**BO: TM15 digital inputs status inverted raw data internal / TM15 DI st raw dat**

**TM15DI.DO**

<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/DO 0 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X520.6)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X520.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X520.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X521.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X521.4)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X521.5)</td>
<td>High</td>
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</tr>
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<td>12</td>
<td>DI/DO 12 (X521.6)</td>
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</tr>
<tr>
<td>13</td>
<td>DI/DO 13 (X521.7)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X521.8)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X521.9)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI/DO 16 (X522.2)</td>
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<td>Low</td>
<td>-</td>
</tr>
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<td>DI/DO 17 (X522.3)</td>
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</tr>
<tr>
<td>18</td>
<td>DI/DO 18 (X522.4)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>DI/DO 19 (X522.5)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
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</tr>
<tr>
<td>22</td>
<td>DI/DO 22 (X522.8)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>DI/DO 23 (X522.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the inverted status of the raw data of the digital inputs of the Terminal Module 15 (TM15).

**Notice:**
The raw data of the digital inputs is directly displayed (e.g. without any debounce).

**Note:**
Should only used for internal Siemens purposes (alternative r4022, r4023).

### p4095

**TM15DI/DO digital inputs simulation mode / TM15D DI sim_mode**

**TM15DI.DO**

<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/DO 0 (X520.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X520.6)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X520.7)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X520.8)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X521.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X521.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X521.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X521.5)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the simulation mode for the digital inputs of Terminal Module 15 (TM15).
## 2 Parameters

### 2.2 List of parameters

#### 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 Module 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/DO**: Bidirectional Digital Input/Output

<table>
<thead>
<tr>
<th>DI/DO</th>
<th>Signal name</th>
<th>Simulation</th>
<th>Terminal eval</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
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<td>DI/DO 12 (X521.6)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
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<td>13</td>
<td>DI/DO 13 (X521.7)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X521.8)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X521.9)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>16</td>
<td>DI/DO 16 (X522.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>17</td>
<td>DI/DO 17 (X522.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>18</td>
<td>DI/DO 18 (X522.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>19</td>
<td>DI/DO 19 (X522.5)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
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<td>20</td>
<td>DI/DO 20 (X522.6)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI/DO 21 (X522.7)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>DI/DO 22 (X522.8)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>DI/DO 23 (X522.9)</td>
<td>Simulation</td>
<td>Terminal eval</td>
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</tr>
</tbody>
</table>

#### p4095 TM31 digital inputs simulation mode / TM31 DI sim_mode

<table>
<thead>
<tr>
<th>TM31</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: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9549, 9550, 9552, 9560, 9562</td>
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</tr>
<tr>
<td>P-Group: Terminals</td>
<td>Unit 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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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>0000 0000 0000 0000 bin</td>
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</tr>
</tbody>
</table>

#### Description:
Sets the simulation mode for the digital inputs of Terminal Module 31 (TM31).

#### Bit field:

<table>
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<th>Bit</th>
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<th>1 signal</th>
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<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>
<tr>
<td>04</td>
<td>DI 4 (X530.1)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X530.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
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</tr>
<tr>
<td>06</td>
<td>DI 6 (X530.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X530.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X541.2)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X541.3)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 10 (X541.4)</td>
<td>Simulation</td>
<td>Terminal eval</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X541.5)</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 Module 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
- **DI/DO**: Bidirectional Digital Input/Output

---

SINAMICS DCM
List Manual (LH8), 02/2015, 6RX1800-0ED76
2 Parameters

2.2 List of parameters

### p4096 TM15DI/DO digital inputs simulation mode, setpoint / TM15D DI sim setp

**TM15DI_DO**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 2

**Data type:** Unsigned32  
**Dyn. index:** -  
**Func. diagram:** 9400, 9401, 9402

**P-Group:** Terminals  
**Unit 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>0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 0000 bin</td>
</tr>
</tbody>
</table>

**Description:** Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 15 (TM15).

**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/DO:** Bidirectional Digital Input/Output

#### 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/DO 0 (X520.2)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>DI/DO 1 (X520.3)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>DI/DO 2 (X520.4)</td>
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<tr>
<td>03</td>
<td>DI/DO 3 (X520.5)</td>
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<tr>
<td>04</td>
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<td>05</td>
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<td>06</td>
<td>DI/DO 6 (X520.8)</td>
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<td>Low</td>
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</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X520.9)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 8 (X520.10)</td>
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<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 9 (X520.11)</td>
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<td>Low</td>
<td>-</td>
</tr>
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<td>10</td>
<td>DI/DO 10 (X520.12)</td>
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</tr>
<tr>
<td>11</td>
<td>DI/DO 11 (X520.13)</td>
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</tr>
<tr>
<td>12</td>
<td>DI/DO 12 (X520.14)</td>
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<td>Low</td>
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</tr>
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</tr>
<tr>
<td>14</td>
<td>DI/DO 14 (X520.16)</td>
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</tr>
<tr>
<td>15</td>
<td>DI/DO 15 (X520.17)</td>
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</tr>
<tr>
<td>16</td>
<td>DI/DO 16 (X520.18)</td>
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<td>Low</td>
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<tr>
<td>17</td>
<td>DI/DO 17 (X520.19)</td>
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</tr>
<tr>
<td>18</td>
<td>DI/DO 18 (X520.20)</td>
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</tr>
<tr>
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<td>DI/DO 19 (X520.21)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>20</td>
<td>DI/DO 20 (X520.22)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>21</td>
<td>DI/DO 21 (X520.23)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>22</td>
<td>DI/DO 22 (X520.24)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
<tr>
<td>23</td>
<td>DI/DO 23 (X520.25)</td>
<td>High</td>
<td>Low</td>
<td>-</td>
</tr>
</tbody>
</table>

### p4096 TM31 digital inputs simulation mode setpoint / TM31 DI sim setp

**TM31**

- **Can be changed:** U, T
- **Calculated:** -
- **Access level:** 2

**Data type:** Unsigned32  
**Dyn. index:** -  
**Func. diagram:** 9549, 9550, 9552, 9560, 9562

**P-Group:** Terminals  
**Unit 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>0000 0000 0000 0000 0000 0000 0000 0000 bin</td>
</tr>
</tbody>
</table>

**Description:** Sets the setpoint for the input signals in the simulation mode of the digital inputs of Terminal Module 31 (TM31).

**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/DO:** Bidirectional Digital Input/Output

#### 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>
</tbody>
</table>
## 2 Parameters

### 2.2 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

| 08 | DI/DO 8 (X541.2) | High | Low | - |
| 09 | DI/DO 9 (X541.3) | High | Low | - |
| 10 | DI/DO 10 (X541.4) | High | Low | - |
| 11 | DI/DO 11 (X541.5) | High | Low | - |

**Description:**
Sets the simulation mode for 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 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

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Terminal evaluation for analog input x</td>
</tr>
<tr>
<td>1</td>
<td>Simulation for analog input x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= AI 0 (X521.1/X521.2, S5.0)</td>
</tr>
<tr>
<td>[1]</td>
<td>= AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>

#### 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: \( p4056, p4097 \)

**Note:**
This parameter is not saved when data is backed-up (\( p0971, p0977 \)).

**AI:** Analog Input

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20.000</td>
<td>Factory setting</td>
</tr>
<tr>
<td>20.000</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

### p4097[0...1] **TM31 analog inputs simulation mode / TM31 AI sim_mode**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= AI 0 (X521.1/X521.2, S5.0)</td>
</tr>
<tr>
<td>[1]</td>
<td>= AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</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] **TM31 analog inputs simulation mode setpoint / TM31 AI sim_setp**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= AI 0 (X521.1/X521.2, S5.0)</td>
</tr>
<tr>
<td>[1]</td>
<td>= AI 1 (X521.3/X521.4, S5.1)</td>
</tr>
</tbody>
</table>

#### Description:
Sets the setpoint for the input value in simulation mode of the analog inputs of Terminal Module 31 (TM31).

#### Value:
- \(-20.000\) to \(20.000\)

#### 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: \( p4056, p4097 \)

#### Note:
This parameter is not saved when data is backed-up (\( p0971, p0977 \)).

**AI:** Analog Input

#### p4099[0] **TM15DI/DO inputs/outputs sampling time / TM15D I/O t_sampl**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= TM15 input/output sampling time</td>
</tr>
</tbody>
</table>

#### Description:
Sets the sampling time for the inputs and outputs of Terminal Module 15 (TM15).

### p4099[0] **TM15DI/DO inputs/outputs sampling time / TM15D I/O t_sampl**

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= TM15 input/output sampling time</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Dependency:**
The parameter can only be modified for p0009 = 3, 29.
The following applies for the sampling time:
The sampling times at a DRIVE-CLiQ line must be integral multiples of one another.
The sampling times of this TM must be an integral multiple of a servo or vector drive that exists in the system.
The minimum permissible sampling time is 125 µs.
Refer to: p0009, r0110, r0111

**Note:**
The changed sampling time is immediately effective after a completed sub-boot (p0009 -> 0).
Parameter p4099[0] must never be equal to zero.

<table>
<thead>
<tr>
<th>p4099[0...2]</th>
<th>TM31 inputs/outputs sampling time / TM31 I/O t_sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM31</td>
<td>Can be changed: C1(3)</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Commands</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [µs]</td>
<td>5000.00 [µs]</td>
</tr>
<tr>
<td>Notice:</td>
<td>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).</td>
</tr>
<tr>
<td>Note:</td>
<td>The changed sampling time is immediately effective after a completed sub-boot (p0009 -&gt; 0).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p4100[0...11]</th>
<th>TM150 sensor type / TM150 sensor type</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM150</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>-</td>
<td>Unit selection: -</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>6</td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Notice:</td>
<td>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).</td>
</tr>
<tr>
<td>Note:</td>
<td>Parameter p4099[0] must never be equal to zero.</td>
</tr>
</tbody>
</table>

**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 following applies for the sampling time:
The sampling times at a DRIVE-CLiQ line must be integral multiples of one another.
The sampling times of this TM must be an integral multiple of a servo or vector drive that exists in the system.
The minimum permissible sampling time is 125 µs.

**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).

**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
2 Parameters

2.2 List of parameters

[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 wire evaluation, additionally channel 6)
X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)
X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)
X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)
X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)
X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)
Details on the wiring are included in the parameter description for p4108.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Value</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4100</td>
<td>TM31 sensor type / TM31 sensor type</td>
<td>Can be changed: T</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9576</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>r4101[0...11]</td>
<td>TM150 sensor resistance / TM150 R_sensor</td>
<td>Can be changed: -</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9626, 9627</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Terminals</td>
<td>P-Group: Terminals</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
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<td>Min</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
<td>- [ohm]</td>
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<tr>
<td></td>
<td></td>
<td>Index:</td>
<td>Index:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>[0]</td>
<td>[0]</td>
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<td>[1]</td>
<td>[1]</td>
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<tr>
<td></td>
<td></td>
<td>[3]</td>
<td>[3]</td>
<td>Temperature channel 3</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>[7]</td>
<td>[7]</td>
<td>Temperature channel 7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[8]</td>
<td>[8]</td>
<td>Temperature channel 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[9]</td>
<td>[9]</td>
<td>Temperature channel 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[10]</td>
<td>[10]</td>
<td>Temperature channel 10</td>
<td></td>
</tr>
</tbody>
</table>
Note: The maximum measurable resistance value is approx. 2500 Ohm. For 1x2 and 2x2 wire evaluation:
The actual sensor resistance is displayed in this parameter (i.e., the wire resistance (p4110) is taken into account).
The temperature sensors are connected to the following terminals:
X531 = channel 0 (for 2x2 wire evaluation, additionally channel 6)
X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)
X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)
X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)
X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)
X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)
Details on the wiring are included in the parameter description for p4108.

r4101  TM31 sensor resistance / TM31 R_sensor
Can be changed: -  Calculated: -  Access level: 3
Data type: Unsigned16  Dyn. index: -  Func. diagram: 9576
P-Group: Terminals  Unit 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(-).

p4102[0...23]  TM150 fault threshold/alarm threshold / TM150 F/A_thresh
Can be changed: U, T  Calculated: -  Access level: 1
Data type: Integer16  Dyn. index: -  Func. diagram: 9626, 9627
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -99 [°C]  Max 251 [°C]  Factory setting 251 [°C]

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)
[5] = Channel 2 fault threshold (F35209)
[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)
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[16]</td>
<td>Channel 8 alarm threshold (A35414)</td>
</tr>
<tr>
<td>[17]</td>
<td>Channel 8 fault threshold (F35404)</td>
</tr>
<tr>
<td>[18]</td>
<td>Channel 9 alarm threshold (A35415)</td>
</tr>
<tr>
<td>[19]</td>
<td>Channel 9 fault threshold (F35405)</td>
</tr>
<tr>
<td>[20]</td>
<td>Channel 10 alarm threshold (A35416)</td>
</tr>
<tr>
<td>[21]</td>
<td>Channel 10 fault threshold (F35406)</td>
</tr>
<tr>
<td>[22]</td>
<td>Channel 11 alarm threshold (A35417)</td>
</tr>
<tr>
<td>[23]</td>
<td>Channel 11 fault threshold (F35407)</td>
</tr>
</tbody>
</table>

Dependency:
Refer to: p4103, r4104, r4105, p4118

Notice:
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].

### p4102[0...1]
**TM31 fault threshold/alarm threshold / TM31 F/A_thresh**

<table>
<thead>
<tr>
<th>TM31</th>
<th>Can be changed: U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-48 [°C]</td>
<td>251 [°C]</td>
</tr>
<tr>
<td>[0] 100 [°C]</td>
<td>[1] 120 [°C]</td>
</tr>
</tbody>
</table>

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.

Index:
[0] = Alarm threshold
[1] = Fault threshold

Dependency:
Refer to: r4104

Notice:
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.

### p4103[0...11]
**TM150 delay time / TM150 t_delay**

<table>
<thead>
<tr>
<th>TM150</th>
<th>Can be changed: U, T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: Motor</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.0 [s]</td>
<td>600.0 [s]</td>
</tr>
<tr>
<td>0.0 [s]</td>
<td></td>
</tr>
</tbody>
</table>

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.

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: 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

**TM31**

**Can be changed:** U, T  
**Data type:** FloatingPoint32  
**P-Group:** Motor  
**Min** 0.000 [ms]  
**Max** 600000.000 [ms]  
**Factory setting** 0.000 [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

**TM150**

**Can be changed:** -  
**Data type:** Unsigned32  
**P-Group:** Terminals  
**Min** -  
**Max** -

**Description:**
Display and bincor output for the status for the Terminal Module 150 (TM150).
2 Parameters

2.2 List of parameters

Dependency:
Refer to: p4102, p4103, r4105, p4118

Bit field: Bit Signal name 1 signal 0 signal FP
00 Channel 0 alarm present Yes No 9626
01 Channel 0 fault present Yes No 9626
02 Channel 1 alarm present Yes No 9626
03 Channel 1 fault present Yes No 9626
04 Channel 2 alarm present Yes No 9626
05 Channel 2 fault present Yes No 9626
06 Channel 3 alarm present Yes No 9626
07 Channel 3 fault present Yes No 9626
08 Channel 4 alarm present Yes No 9626
09 Channel 4 fault present Yes No 9626
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

r4104.0...1 BO: TM31 temperature evaluation status / TM31 temp status

TM31 Can be changed: - Calculated: - Access level: 1
Data type: Unsigned16 Dyn. index: - Func. diagram: 9549, 9576
P-Group: Terminals Unit 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).

Dependency: Refer to: p4102

Bit field:

Bit Signal name 1 signal 0 signal FP
00 Alarm is present Yes No -
01 Fault is present Yes No -

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 Dyn. index: - Func. diagram: 9626, 9627
P-Group: Terminals Unit group: - Unit selection: -
Not for motor type: - Scaling: p2006 Expert list: 1
Min Max Factory setting
- [°C] - [°C] - [°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
2 Parameters

2.2 List of parameters

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 °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**

**TM31**
- Can be changed: -
- Data type: FloatingPoint32
- P-Group: Terminals
- Not for motor type: -
- Min: - °C
- Max: - °C

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°C.
- above the nominal response temperature, r4105 = 250 °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 °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**

**TM150**
- Can be changed: T
- Data type: Integer16
- P-Group: -
- Not for motor type: -
- Min: 0
- Max: 3

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(+).
- 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(-).
**Parameter List**

### 2 Parameters

**2.2 List of parameters**

#### Value:
- **0**: 1x2 wire evaluation
- **1**: 2x2 wire evaluation
- **2**: 3 wire evaluation
- **3**: 4 wire evaluation

#### Index:
- **[0]** = X531
- **[1]** = X532
- **[2]** = X533
- **[3]** = X534
- **[4]** = X535
- **[5]** = X536

#### Note:
The temperature sensors are connected to the following terminals:
- X531 = channel 0 (for 2x2 wire evaluation, additionally channel 6)
- X532 = channel 1 (for 2x2 wire evaluation, additionally channel 7)
- X533 = channel 2 (for 2x2 wire evaluation, additionally channel 8)
- X534 = channel 3 (for 2x2 wire evaluation, additionally channel 9)
- X535 = channel 4 (for 2x2 wire evaluation, additionally channel 10)
- X536 = channel 5 (for 2x2 wire evaluation, additionally channel 11)

Re `p4108[0...5] = 0, 2, 3 (1x2, 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).

### 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:
Wire resistance measurement is only possible for 1x2 or 2x2 wire evaluation (`p4108[0...5] = 0, 1`).

#### Note:
The wire resistance value can be also directly entered into `p4110[0...11]`.

The automatic conductor calibration for 1x2 and 2x2 wire evaluation is always performed with the value in `p4110[0...11]`.

---

**Description:**
Setting to start the measurement of the wire resistance for a channel for the Terminal Module 150 (TM150).

For a 2 wire evaluation, the total wire resistance is measured and saved. During the temperature evaluation, the temperature actual value is automatically calibrated using the measured wire resistance.

**Procedure:**
1. Select the measuring method (1x2/2x2) 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 wire 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.
### p4110[0...11] TM150 wire resistance value / TM150 R_wire value

**TM150**

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

**Data type:** FloatingPoint32
**Dyn. index:** -
**Func. diagram:** 9626, 9627

**P-Group:** -
**Unit group:** -
**Unit selection:** -

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

**Min**
**Max**
0.00 [ohm] 3000.00 [ohm]
0.00 [ohm]

**Description:**
Sets and displays the wire resistance for Terminal Module 150 (TM150).

The value is used for the automatic conductor calibration.

The value is automatically set by starting the wire 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:**
Wire resistance measurement is only possible for 1x2 or 2x2 wire evaluation (p4108[0...5] = 0, 1).

**Note:**
Automatic conductor calibration is deactivated using p4110[0...11] = 0.

### p4111[0...2] TM150 group channel assignment / TM150 grp channel

**TM150**

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

**Data type:** Unsigned16
**Dyn. index:** -
**Func. diagram:** 9625

**P-Group:** -
**Unit group:** -
**Unit selection:** -

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

**Min**
**Max**
- -
0000 0000 0000 0000 bin

**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
Notice: 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

| Description: | 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. |
| Recommendation: | The following connector inputs can use these connector outputs for interconnection: |
| Index: | [0] = Group 0 |
|                     | [1] = Group 1 |
| Dependency: | Refer to: r4105, p4111, r4113, r4114 |

r4113[0...2] CO: TM150 group temperature actual value minimum value / TM150 grp temp min

| Description: | 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. |
| Recommendation: | The following connector inputs can use these connector outputs for interconnection: |
| Index: | [0] = Group 0 |
|                     | [1] = Group 1 |
| Dependency: | Refer to: r4105, p4111, r4112, r4114 |
2 Parameters

2.2 List of parameters

### r4114[0...2]

**CO: TM150 group temperature average actual value / TM150 grp temp av**

<table>
<thead>
<tr>
<th>TM150</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:** FloatingPoint32  
**P-Group:** Terminals  
**Not for motor type:** -  
**Min** | Max | Factory setting |
| - [°C] | - [°C] | |

**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.

**Recommendation:** The following connector inputs can use these connector outputs for interconnection:
- CI: p0603
- CI: p0608[0...3]
- CI: p0609[0...3]
- CI: p2051

**Index:**
- [0] = Group 0  
- [1] = Group 1  

**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.

### p4117[0...2]

**TM150 group sensor error effect / TM150 error effect**

<table>
<thead>
<tr>
<th>TM150</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:** Integer16  
**P-Group:** -  
**Not for motor type:** -  
**Min** | Max | Factory setting |
| 0 | 1 | 0 |

**Description:** Sets the effect for an error of a sensor of a group for Terminal Module TM150 (TM150). For p4117 = 0, the following applies:

The defective temperature sensor assigned to a group is not take into account when forming the group. For p4117 = 1, the following applies:

For a sensor error, for the maximum value, minimum value and average value of the corresponding group, a value of -300 °C is output.

**Value:**
- 0: Skip sensor  
- 1: Output value = -300 °C

**Index:**
- [0] = Group 0  
- [1] = Group 1  

**Dependency:** Refer to: r4105, p4111, r4112, r4113, r4114

### p4118[0...11]

**TM150 fault threshold/alarm threshold hysteresis / TM150 thresh hyst**

<table>
<thead>
<tr>
<th>TM150</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  
**P-Group:** -  
**Not for motor type:** -  
**Min** | Max | Factory setting |
| 0 [K] | 50 [K] | 5 [K] |

**Description:** Sets the hysteresis for the fault threshold/alarm threshold (p4102[0...23]) 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
2 Parameters

2.2 List of parameters

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

<table>
<thead>
<tr>
<th>Data type: Integer16</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9626, 9627</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

Min: 0  Max: 1  Factory setting: 0

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.

Value: 0: Filter deactivated 1: Filter activated

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

<table>
<thead>
<tr>
<th>Data type: Unsigned16</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9626, 9627</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

Min: - [ms]  Max: - [ms]  Factory setting: - [ms]

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.
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4121</strong></td>
<td>TM150 filter rated line frequency / TM150 filt f_line</td>
</tr>
<tr>
<td><strong>r4640[0...95]</strong></td>
<td>Encoder diagnostics state machine / Enc diag stat_ma</td>
</tr>
<tr>
<td><strong>p4641[0...2]</strong></td>
<td>OEM encoder diagnostic signal selection / OEM enc diag sel</td>
</tr>
<tr>
<td><strong>p4650</strong></td>
<td>Encoder functional reserve component number / Enc fct_res num</td>
</tr>
<tr>
<td><strong>r4651[0...3]</strong></td>
<td>Encoder functional reserve / Enc fct_reserve</td>
</tr>
</tbody>
</table>

#### p4121: TM150 filter rated line frequency / TM150 filt f_line
- **Description:** Sets the rated line frequency for the filter to skip the line frequency for Terminal Module 150 (TM150).
- **Value:**
  - 0: 50 Hz
  - 1: 60 Hz

#### r4640[0...95]: Encoder diagnostics state machine / Enc diag stat_ma
- **Description:** Displays the encoder diagnostics for the PROFIdrive interface.
- **Index:**
  - [0] = Encoder 1
  - [1] = Encoder 2
  - [2] = Encoder 3

#### p4641[0...2]: OEM encoder diagnostic signal selection / OEM enc diag sel
- **Description:** Trace functionality for OEM encoder manufacturers.
- **Index:**
  - [0] = Encoder 1
  - [1] = Encoder 2
  - [2] = Encoder 3

#### p4650: Encoder functional reserve component number / Enc fct_res num
- **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
- **Description:** Displays the functional reserve of the encoder selected via p4650.
### 2.2 List of parameters

#### p4652[0...2]

**XIST1_ERW reset mode / XIST1_ERW res mode**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed: C1(3)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the mode to reset the actual value in XIST_ERW (CO: r4653).

**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] = -

**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 binoector input p4655.
- If value = 3:
  - The value in XIST1_ERW is reset after a 0/1 edge via binoector input p4655 when passing the next zero mark.

#### r4653[0...2]

**CO: XIST1_ERW actual value / XIST1_ERW actval**

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsgned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 4750</td>
<td></td>
</tr>
<tr>
<td>P-Group: Encoder</td>
<td>Unit 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:** Display and connector output for the actual value XIST1_ERW.

**Index:**
- [0] = Encoder 1
- [1] = Encoder 2
- [2] = -

**Dependency:** Refer to: p4652, r4654, p4655
2 Parameters

2.2 List of parameters

### r4654.0...8

**CO/BO: XIST1_ERW status / XIST1_ERW stat**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Display and binector output to reset XIST1_ERW.</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>Data type: Unsigned32</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p4652, r4653, r4655

**Note:**

The reset of XIST1_ERW depends on the selected mode (p4652).

**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>
</tbody>
</table>

**Description:**

Sets the signal source to reset XIST1_ERW (CO: r4653).

**Index:**

[0] = Encoder 1
[1] = Encoder 2
[2] = -

**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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Sets the signal source to reset XIST1_ERW (CO: r4653).</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p4652, r4653, r4654

**Note:**

The reset of XIST1_ERW depends on the selected mode (p4652).

### p4660[0...2]

**Sensor Module filter bandwidth / SM Filt_bandw**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: C2(4)</td>
<td>Sets the filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos).</td>
</tr>
<tr>
<td>DC_CTRL_R</td>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_R_S,</td>
<td>P-Group: Encoder</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL_S</td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td></td>
</tr>
</tbody>
</table>

**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] = Reserved

**Dependency:**

Refer to: r4661

**Note:**

A value of zero is displayed if an encoder is not present.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4661[0…2]</td>
<td>Sensor Module filter bandwidth display / SM Filt_bandw disp</td>
<td></td>
<td></td>
<td>Display of the effective filter bandwidth for Sensor Module SMx10 (resolver) and SMx20 (sin/cos). The bandwidth of the filter is set using p4660.</td>
</tr>
<tr>
<td>p4678[0…n]</td>
<td>Analog sensor LVDT ratio / An_sens LVDT ratio</td>
<td></td>
<td></td>
<td>A value of zero is displayed if an encoder is not present.</td>
</tr>
<tr>
<td>p4679[0…n]</td>
<td>Analog sensor LVDT phase / An_sens LVDT ph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p4680[0…n]</td>
<td>Zero mark monitoring tolerance permissible / ZM_monit tol perm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p4681[0…n]</td>
<td>Zero mark monitoring tolerance window limit 1 positive / ZM tol lim 1 pos</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If the deviation is less than this limit, then the pulse number 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, p4688
Note: This monitoring is activated by setting p0437.2 = 1 (position actual value correction).

The positive limit describes additional pulses due to EMC.

**p4682[0...n]** Zero mark monitoring tolerance window limit 1 negative / ZM tol limit 1 neg

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4682</td>
<td>Sets the negative tolerance window in encoder pulses for limit 1 for the zero mark monitoring.</td>
<td>-1001</td>
<td>0</td>
<td>-1001</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p0437, p4681, p4688
Note: For a set value = -1001, the negated value of p4682 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4683</td>
<td>Sets the positive tolerance window in encoder pulses for limit 2 for the zero mark monitoring.</td>
<td>0</td>
<td>100000</td>
<td>0</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p0437, p4681, p4682, p4688
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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4684</td>
<td>Sets the negative tolerance window in encoder pulses for limit 2 for the zero mark monitoring.</td>
<td>-100001</td>
<td>0</td>
<td>-100001</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p0437, p4683, p4688
Note: Zero mark monitoring is activated by setting p0437.2 = 1 (position actual value correction).
For a set value = -100001, the negated value of p4684 is effective.
2 Parameters

2.2 List of parameters

**p4685[0...n]**  
**Speed actual value mean value generation / n_act mean val**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Sets the number of current controller clock cycles for mean value generation of the speed actual value.</td>
<td>Value = 0, 1: No mean value generation. Higher values also mean higher dead times for the speed actual value.</td>
</tr>
</tbody>
</table>
| **p4686[0...n]**  
**Zero mark minimum length / ZM min length**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Sets the minimum length for the zero mark in 1/4 encoder pulses.</td>
<td>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).</td>
</tr>
</tbody>
</table>
| **p4688[0...2]**  
**CO: Zero mark monitoring differential pulse count / ZM diff_pulse qty**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the number of differential pulses for the zero mark monitoring that have accumulated. 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).</td>
<td>The display can only be reset to zero.</td>
</tr>
</tbody>
</table>
| **r4689[0...2]**  
**CO: Squarewave encoder diagnostics / Sq-wave enc diag**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL,</strong> DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Displays the encoder status according to PROFIdrive for a squarewave encoder.</td>
<td>After alarm A3x422 is output, this parameter is set for 100 ms.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p4700[0...1]</strong></td>
<td>Trace control / Trace control</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit 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</td>
<td>2</td>
</tr>
</tbody>
</table>

**Description:** Setting to control the trace function.

**Value:**
- 0: Stop trace
- 1: Start trace
- 2: Start trace and save values

**Index:**
- [0] = Trace 0
- [1] = Trace 1

| **p4701** | Measuring function control / Meas fct ctrl | Can be changed: U, T | Calculated: - | Access level: 3 |
| | | Data type: Integer16 | Dyn. index: - | Func. diagram: - |
| | | P-Group: Trace and function generator | Unit group: - | Unit selection: - |
| | | Not for motor type: - | Scaling: - | Expert list: 0 |
| | | Min | Max | Factory setting |
| | | 0 | 3 | 0 |

**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

| **p4703[0...1]** | Trace options / Trace options | Can be changed: T | Calculated: - | Access level: 3 |
| | | Data type: Unsigned16 | Dyn. index: - | Func. diagram: - |
| | | P-Group: Trace and function generator | Unit group: - | Unit selection: - |
| | | Not for motor type: - | Scaling: - | Expert list: 0 |
| | | Min | Max | Factory setting |
| | | - | - | 0000 bin |

**Description:** Sets the options for the trace.

**Index:**
- [0] = Trace 0
- [1] = Trace 1

**Dependency:** Refer to: p4700

**Note:**
- Re bit 00:
  - 0: The trace starts with p4700 as before.
  - 1: When powering up, the trace starts immediately with the saved parameter settings with the start of the time slices.

| **r4705[0...1]** | Trace status / Trace status | Can be changed: - | Calculated: - | Access level: 3 |
| | | Data type: Integer16 | Dyn. index: - | Func. diagram: - |
| | | P-Group: Trace and function generator | Unit group: - | Unit selection: - |
| | | Not for motor type: - | Scaling: - | Expert list: 0 |
| | | Min | Max | Factory setting |
| | | 0 | 4 | - |

**Description:** Displays the actual status of the trace.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>0: Trace inactive</td>
<td>[0] = Trace 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Trace is recording presamples</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Trace is waiting for trigger event</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: Trace is recording</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: Recording (trace) ended</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
</tr>
</tbody>
</table>

#### Measuring function status / Meas fct status

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>0: Measurement function inactive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Measuring function parameterization checked</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2: Measuring function waits for stabilizing time</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3: Measuring function recording (tracing)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4: Measuring function trace ended with error</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5: Measuring function trace successfully completed</td>
<td></td>
</tr>
</tbody>
</table>

#### Measurement function configuration / Meas fct config

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>0: Standard</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1: Free meas fct</td>
<td></td>
</tr>
</tbody>
</table>

#### Trace memory space required / Trace mem required

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Value:</strong></td>
<td>Displays the required memory in bytes for the actual parameterization.</td>
<td></td>
</tr>
<tr>
<td><strong>Index:</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

**r4709[0...1]**  
Trace memory space required for measuring functions / Trace mem required

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the required memory in bytes for the actual parameterization.</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Value: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**p4710[0...1]**  
Trace trigger condition / Trace Trig_cond

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Sets the trigger condition for the trace.</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td></td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Value:</td>
<td>Min</td>
<td>1</td>
<td>Max</td>
</tr>
</tbody>
</table>

**p4711[0...5]**  
Trace trigger signal / Trace trig_signal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Selects the trigger signal for the trace.</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td></td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Value:</td>
<td>Min</td>
<td>-</td>
<td>Max</td>
</tr>
</tbody>
</table>

For index 2(4) and 3(5) equal to zero, index 0(1) can only be written and vice versa. For trace with a physical address (p4789), the data type of the trigger signal is set here.
### 2 Parameters

#### 2.2 List of parameters

- **Index 2 ... 3:**
  - The triggering PIN for trace 0 is entered here.
  - Index 2 bit 31 ... 16: Number of the Drive Object (DO), bit 15 ... 0: Number of the chart
  - Index 3 bit 31 ... 16: Number of the block, bit 15 ... 0: Number of the PIN
  - Re index 4 ... 5:
  - The triggering PIN for trace 1 is entered here.
  - Index 4 bit 31 ... 16: Number of the Drive Object (DO), bit 15 ... 0: Number of the chart
  - Index 5 bit 31 ... 16: Number of the block, bit 15 ... 0: Number of the PIN

---

#### p4712[0...1]

**Trace trigger threshold / Trace trig_thresh**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the trigger threshold for the trace.</td>
</tr>
<tr>
<td>Index</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td></td>
<td></td>
<td>Only effective when p4710 = 2, 3.</td>
</tr>
</tbody>
</table>

---

#### p4713[0...1]

**Trace tolerance band trigger threshold 1 / Trace trig thr 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the first trigger threshold for trigger via tolerance band.</td>
</tr>
<tr>
<td>Index</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td></td>
<td></td>
<td>Only effective when p4710 = 4, 5.</td>
</tr>
</tbody>
</table>

---

#### p4714[0...1]

**Trace tolerance band trigger threshold 2 / Trace trig thr 2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the second trigger threshold for trigger via tolerance band</td>
</tr>
<tr>
<td>Index</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td></td>
<td></td>
<td>Only effective when p4710 = 4, 5.</td>
</tr>
</tbody>
</table>

---

#### p4715[0...1]

**Trace bit mask trigger, bit mask / Trace trig mask**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default</th>
<th>Access level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sets the bit mask for the bit mask trigger.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 6.

**p4716[0...1]** Trace bit mask trigger trigger condition / Trace Trig_cond

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default Value</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4294967295</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the trigger condition for bit mask trigger.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only effective when p4710 = 6.

**r4719[0...1]** Trace trigger index / Trace Trig_index

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default Value</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the trigger index in the trace buffer. The trigger event occurred at this point.

Index: [0] = Trace 0
[1] = Trace 1

Dependency: Only valid when p4705 = 4.

**p4720[0...1]** Trace recording cycle / Trace record_cyc

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default Value</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>0.000 [ms]</td>
<td>60000.000 [ms]</td>
<td>1.000 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the recording cycle for the trace.

Index: [0] = Trace 0
[1] = Trace 1

**p4721[0...1]** Trace recording time / Trace record_time

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Type</th>
<th>Default Value</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></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>
<td></td>
<td></td>
</tr>
<tr>
<td>0.000 [ms]</td>
<td>3600000.000 [ms]</td>
<td>1000.000 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the recording time for the trace.

Index: [0] = Trace 0
[1] = Trace 1
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Calculated</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4722[0...1] Trace trigger delay / Trace trig_delay</td>
<td>Sets the trigger delay for the trace.</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0.000 [ms]</td>
</tr>
<tr>
<td>p4723[0...1] Trace time slice cycle / Trace cycle</td>
<td>Sets the time slice cycle in which the trace is called.</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0.12500 [ms]</td>
</tr>
<tr>
<td>p4724[0...1] Trace average in the time range / Trace average</td>
<td>Sets the averaging in the time range for the trace.</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>Unsigned8</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>0000 bin</td>
</tr>
<tr>
<td>r4725[0...1] Trace data type 1 traced / Trace rec type 1</td>
<td>Displays the recorded data type 1 for the trace.</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter (r4726[0...1])</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Access level</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4726[0...1]</td>
<td>Trace data type 2 traced / Trace rec type 2</td>
<td>[0] = Trace 0</td>
<td>Unsigned32</td>
<td>Trace and function generator</td>
<td>Calculated: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Displays the recorded data type 2 for the trace.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (r4727[0...1])</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Access level</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4727[0...1]</td>
<td>Trace data type 3 traced / Trace rec type 3</td>
<td>[0] = Trace 0</td>
<td>Unsigned32</td>
<td>Trace and function generator</td>
<td>Calculated: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Displays the recorded data type 3 for the trace.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (r4728[0...1])</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Access level</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4728[0...1]</td>
<td>Trace data type 4 traced / Trace rec type 4</td>
<td>[0] = Trace 0</td>
<td>Unsigned32</td>
<td>Trace and function generator</td>
<td>Calculated: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Displays the recorded data type 4 for the trace.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (r4729[0...1])</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Access level</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4729[0...1]</td>
<td>Trace number of recorded values / Trace rec values</td>
<td>[0] = Trace 0</td>
<td>Unsigned32</td>
<td>Trace and function generator</td>
<td>Calculated: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Displays the number of traced values for each signal.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter (p4730[0...5])</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Access level</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4730[0...5]</td>
<td>Trace record signal 0 / Trace record sig 0</td>
<td>[0] = Trace 0</td>
<td>Unsigned32</td>
<td>Trace and function generator</td>
<td>Calculated: U, T</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Trace 1</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Selects the first signal to be traced.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Trace 0 parameter in BICO format</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>[1]</td>
<td>Trace 1 parameter in BICO format</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>[2]</td>
<td>Trace 0 PINx with DO Id and chart Id</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>[3]</td>
<td>Trace 0 PINx with block Id and PIN Id</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>[4]</td>
<td>Trace 1 PINy with DO Id and chart Id</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>[5]</td>
<td>Trace 1 PINy with block Id and PIN Id</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

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

Description:

- Selects the second signal to be traced.
- Selects the third signal to be traced.
- Selects the fourth signal to be traced.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p4734[0...5] Trace record signal 4 / Trace record sig 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Function diagram:</strong> -</td>
</tr>
<tr>
<td><strong>Expert list:</strong> 0</td>
</tr>
<tr>
<td><strong>Factory setting:</strong> 0</td>
</tr>
</tbody>
</table>

**Description:** Selects the fifth 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

<table>
<thead>
<tr>
<th>p4735[0...5] Trace record signal 5 / Trace record sig 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
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<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
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<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Access level:</strong> 3</td>
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<tr>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Function diagram:</strong> -</td>
</tr>
<tr>
<td><strong>Expert list:</strong> 0</td>
</tr>
<tr>
<td><strong>Factory setting:</strong> 0</td>
</tr>
</tbody>
</table>

**Description:** Selects the sixth 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

<table>
<thead>
<tr>
<th>p4736[0...5] Trace record signal 6 / Trace record sig 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Function diagram:</strong> -</td>
</tr>
<tr>
<td><strong>Expert list:</strong> 0</td>
</tr>
<tr>
<td><strong>Factory setting:</strong> 0</td>
</tr>
</tbody>
</table>

**Description:** Selects the seventh 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

<table>
<thead>
<tr>
<th>p4737[0...5] Trace record signal 7 / Trace record sig 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
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<td><strong>Calculated:</strong> -</td>
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<td><strong>Access level:</strong> 3</td>
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<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td><strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Function diagram:</strong> -</td>
</tr>
<tr>
<td><strong>Expert list:</strong> 0</td>
</tr>
<tr>
<td><strong>Factory setting:</strong> 0</td>
</tr>
</tbody>
</table>

**Description:** Selects the eighth signal to be traced.
2 Parameters

2.2 List of parameters

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

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: -
- P-Group: Trace and function generator
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0
- Min -
- Max -
- Factory setting

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

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: -
- P-Group: Trace and function generator
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0
- Min -
- Max -
- Factory setting

Description: Displays the trace buffer (record buffer) for trace 0 and signal 1.

Dependency: Refer to: r4740, p4795

**r4742[0...16383]** Trace 0 trace buffer signal 2 floating point / Trace 0 tr sig 2

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: -
- P-Group: Trace and function generator
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0
- Min -
- Max -
- Factory setting

Description: Displays the trace buffer (record buffer) for trace 0 and signal 2.

Dependency: Refer to: r4740, p4795

**r4743[0...16383]** Trace 0 trace buffer signal 3 floating point / Trace 0 tr sig 3

CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S

- Can be changed: -
- Calculated: -
- Access level: 3
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: -
- P-Group: Trace and function generator
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 0
- Min -
- Max -
- Factory setting

Description: Displays the trace buffer (record buffer) for trace 0 and signal 3.
### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4744[0...16383]</td>
<td>Trace 0 trace buffer signal 4 floating point / Trace 0 tr sig 4</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>r4745[0...16383]</td>
<td>Trace 0 trace buffer signal 5 floating point / Trace 0 tr sig 5</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>r4746[0...16383]</td>
<td>Trace 0 trace buffer signal 6 floating point / Trace 0 tr sig 6</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>r4747[0...16383]</td>
<td>Trace 0 trace buffer signal 7 floating point / Trace 0 tr sig 7</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>r4750[0...16383]</td>
<td>Trace 1 trace buffer signal 0 floating point / Trace 1 tr sig 0</td>
<td>Refer to: r4740, p4795</td>
</tr>
</tbody>
</table>
## 2 Parameters
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4751[0...16383]</td>
<td>Trace 1 trace buffer signal 1 floating point / Trace 1 tr sig 1</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 1.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
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<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
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</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4752[0...16383]</td>
<td>Trace 1 trace buffer signal 2 floating point / Trace 1 tr sig 2</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 2.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4753[0...16383]</td>
<td>Trace 1 trace buffer signal 3 floating point / Trace 1 tr sig 3</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 3.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
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</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4754[0...16383]</td>
<td>Trace 1 trace buffer signal 4 floating point / Trace 1 tr sig 4</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 4.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
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</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Dyn. index: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 0</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r4755[0...16383]</td>
<td>Trace 1 trace buffer signal 5 floating point / Trace 1 tr sig 5</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 5.</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>Refer to: r4740, p4795</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
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</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
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<td>Expert list: 0</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r4756[0...16383]**  | Trace 1 trace buffer signal 6 floating point / Trace 1 tr sig 6
---|---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: -  
Data type: FloatingPoint32  
P-Group: Trace and function generator  
Not for motor type: -  
Min | Calculated: -  
Dyn. index: -  
Unit group: -  
Scaling: -  
Expert list: 0  
Max | Access level: 3  
Factory setting

**Dependency:** Displays the trace buffer (record buffer) for trace 1 and signal 6.

**r4757[0...16383]**  | Trace 1 trace buffer signal 7 floating point / Trace 1 tr sig 7
---|---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: -  
Data type: FloatingPoint32  
P-Group: Trace and function generator  
Not for motor type: -  
Min | Calculated: -  
Dyn. index: -  
Unit group: -  
Scaling: -  
Expert list: 0  
Max | Access level: 3  
Factory setting

**Dependency:** Displays the trace buffer (record buffer) for trace 1 and signal 7.

**r4760[0...16383]**  | Trace 0 trace buffer signal 0 / Trace 0 tr sig 0
---|---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: -  
Data type: Unsigned32  
P-Group: Trace and function generator  
Not for motor type: -  
Min | Calculated: -  
Dyn. index: -  
Unit group: -  
Scaling: -  
Expert list: 0  
Max | Access level: 3  
Factory setting

**Dependency:** 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:  
r4760[0] = value 0  
r4760[1] = value 1  
...  
r4760[8191] = value 8191  
For signals, data type I16 or U16, the trace buffer is assigned as follows:  
r4760[0] = value 1 (bit 31 ... 16) and value 0 (bit 15 ... 0)  
r4760[1] = value 3 (bit 31 ... 16) and value 2 (bit 15 ... 0)  
...  
r4760[8191] = value 16383 (bit 31 ... 16) and value 16382 (bit 15 ... 0)  
For signals, data type I8 or U8, the trace buffer is assigned as follows:  
r4760[0] = value 3 (bit 31 ... 24) value 2 (bit 23 ... 16) value 1 (bit 15 ... 8) value 0 (bit 7 ... 0)  
r4760[1] = value 7 (bit 31 ... 24) value 6 (bit 23 ... 16) value 5 (bit 15 ... 8) value 4 (bit 7 ... 0)  
...  
r4760[8191] = value 32767 (bit 31 ... 24) value 32766 (bit 23 ... 16) value 32765 (bit 15 ... 8) value 32764 (bit 7 ... 0)

**Dependency:** Displays the trace buffer (record buffer) for trace 0 and signal 1.

**r4761[0...16383]**  | Trace 0 trace buffer signal 1 / Trace 0 tr sig 1
---|---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: -  
Data type: Unsigned32  
P-Group: Trace and function generator  
Not for motor type: -  
Min | Calculated: -  
Dyn. index: -  
Unit group: -  
Scaling: -  
Expert list: 0  
Max | Access level: 3  
Factory setting

**Dependency:** Displays the trace buffer (record buffer) for trace 0 and signal 1.
<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4762[0...16383]</td>
<td>Trace 0 trace buffer signal 2 / Trace 0 tr sig 2</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 2.</td>
</tr>
<tr>
<td>r4763[0...16383]</td>
<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>
</tr>
<tr>
<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>
</tr>
<tr>
<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>
</tr>
<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>
</tr>
</tbody>
</table>
## 2 Parameters
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r4767[0...16383]</strong></td>
<td>Trace 0 trace buffer signal 7 / Trace 0 tr sig 7</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the trace buffer (record buffer) for trace 0 and signal 7.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r4770[0...16383]</strong></td>
<td>Trace 1 trace buffer signal 0 / Trace 1 trace sig0</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 0.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r4771[0...16383]</strong></td>
<td>Trace 1 trace buffer signal 1 / Trace 1 tr sig 1</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r4772[0...16383]</strong></td>
<td>Trace 1 trace buffer signal 2 / Trace 1 tr sig 2</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>r4773[0...16383]</strong></td>
<td>Trace 1 trace buffer signal 3 / Trace 1 tr sig 3</td>
<td>Yes</td>
<td>No</td>
<td>3</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Displays the trace buffer (record buffer) for trace 1 and signal 3.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r4774[0...16383]** Trace 1 trace buffer signal 4 / Trace 1 tr sig 4

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit 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>CU_DC</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>CU_DC_R</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>CU_DC_R_S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>CU_DC_S</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4760

**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 4.

**r4775[0...16383]** Trace 1 trace buffer signal 5 / Trace 1 tr sig 5

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit 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>CU_DC</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>CU_DC_R</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>CU_DC_R_S</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>CU_DC_S</td>
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</tr>
</tbody>
</table>

**Dependency:** Refer to: r4760

**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 5.

**r4776[0...16383]** Trace 1 trace buffer signal 6 / Trace 1 tr sig 6

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit 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>CU_DC</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Trace and function generator</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>CU_DC_R</td>
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</tr>
<tr>
<td>CU_DC_R_S</td>
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</tr>
<tr>
<td>CU_DC_S</td>
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<td>-</td>
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</tbody>
</table>

**Dependency:** Refer to: r4760

**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 6.

**r4777[0...16383]** Trace 1 trace buffer signal 7 / Trace 1 tr sig 7

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td>CU_DC</td>
<td>-</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_DC_R</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_DC_R_S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4760

**Description:** Displays the trace buffer (record buffer) for trace 1 and signal 7.

**p4780[0...1]** Trace physical address signal 0 / Trace PhyAddr Sig0

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Not for motor type</th>
<th>Scaling</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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</thead>
<tbody>
<tr>
<td>CU_DC</td>
<td>U, T</td>
<td>-</td>
<td>Unsigned32</td>
<td>-</td>
<td>Trace and function generator</td>
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<tr>
<td>CU_DC_R</td>
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</tr>
<tr>
<td>CU_DC_R_S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Index:** [0] = Trace 0  
[1] = Trace 1
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4781[0...1] Trace physical address signal 1 / Trace PhyAddr Sig1</td>
<td>Sets the physical address for the second signal to be traced. The data type is defined using p4731.</td>
<td>[0] = Trace 0 [1] = Trace 1</td>
<td>0000 bin 1111 1111 1111 1111 1111 1111 1111 0000 bin</td>
</tr>
<tr>
<td>p4782[0...1] Trace physical address signal 2 / Trace PhyAddr Sig2</td>
<td>Sets the physical address for the third signal to be traced. The data type is defined using p4732.</td>
<td>[0] = Trace 0 [1] = Trace 1</td>
<td>0000 bin 1111 1111 1111 1111 1111 1111 1111 0000 bin</td>
</tr>
<tr>
<td>p4783[0...1] Trace physical address signal 3 / Trace PhyAddr Sig3</td>
<td>Sets the physical address for the fourth signal to be traced. The data type is defined using p4733.</td>
<td>[0] = Trace 0 [1] = Trace 1</td>
<td>0000 bin 1111 1111 1111 1111 1111 1111 1111 0000 bin</td>
</tr>
<tr>
<td>p4784[0...1] Trace physical address signal 4 / Trace PhyAddr Sig4</td>
<td>Sets the physical address for the fifth signal to be traced. The data type is defined using p4734.</td>
<td>[0] = Trace 0 [1] = Trace 1</td>
<td>0000 bin 1111 1111 1111 1111 1111 1111 1111 0000 bin</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>Access level</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4785[0...1]</td>
<td>Trace physical address signal 5 / Trace PhyAddr Sig5</td>
<td>[0] = Trace 0&lt;br&gt;[1] = Trace 1</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>p4786[0...1]</td>
<td>Trace physical address signal 6 / Trace PhyAddr Sig6</td>
<td>[0] = Trace 0&lt;br&gt;[1] = Trace 1</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>p4787[0...1]</td>
<td>Trace physical address signal 7 / Trace PhyAddr Sig7</td>
<td>[0] = Trace 0&lt;br&gt;[1] = Trace 1</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>p4789[0...1]</td>
<td>Trace physical address trigger signal / Trace PhyAddr Trig</td>
<td>[0] = Trace 0&lt;br&gt;[1] = Trace 1</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>3</td>
<td>Trace and function generator</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

Description:
- Sets the physical address for the sixth signal to be traced.
- The data type is defined using p4735.
- Sets the physical address for the seventh signal to be traced.
- The data type is defined using p4736.
- Sets the physical address for the eighth signal to be traced.
- The data type is defined using p4737.
- Sets the physical address for the trigger signal.
- The data type is defined by making the appropriate selection in p4711.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r4790[0...1]</td>
<td>Trace data type 5 traced / Trace rec type 5</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>p4795</td>
<td>Trace memory bank changeover / Trace mem changeov</td>
<td>[0] = Trace 0, [1] = Trace 1</td>
<td>3</td>
<td>Unsigned32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the recorded data type 5 for the trace.

Description: Displays the recorded data type 6 for the trace.

Description: Displays the recorded data type 7 for the trace.

Description: Displays the recorded data type 8 for the trace.

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
### 2 Parameters

#### 2.2 List of parameters

**r4797[0...1]**  
Trace 0 trigger instant / Trace 0 t\_trigger

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
</table>
| Can be changed:                    | Displays the instant in time for fulfilling the trigger condition for trace recorder 0. |       | Refer to: r2114, r3102, r4719 | The accuracy of the trigger instant depends on the accuracy of the underlying basis time.  
For clarification:  
The trigger instant is calculated with a µs accuracy. If the underlying basis time is only available with ms accuracy, then as a result of rounding effects, an inaccuracy of 1 ms can occur.  
When referred to r4719, the trigger instant can therefore deviate somewhat.  
**Note:** If the time calculation of the drive can be synchronized with a higher-level control, then this time can be taken from the actual UTC time (r3102 ). Otherwise, the time is based on the system runtime (r2114). |
| Data type: Unsigned32              |                                                                            |       |            |                                                                                                                                             |
| P-Group: Trace and function generator |                                                                            |       |            |                                                                                                                                             |
| Not for motor type:                |                                                                            |       |            |                                                                                                                                             |
| Min                                |                                                                            |       |            |                                                                                                                                             |
| Max                                |                                                                            |       |            |                                                                                                                                             |
| Access level: 3                    |                                                                            |       |            |                                                                                                                                             |

**r4798[0...1]**  
Trace 1 trigger instant / Trace 1 t\_trigger

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
</table>
| Can be changed:                    | Displays the instant in time for fulfilling the trigger condition for trace recorder 1. |       | Refer to: r2114, r3102, r4719 | The accuracy of the trigger instant depends on the accuracy of the underlying basis time.  
For clarification:  
The trigger instant is calculated with a µs accuracy. If the underlying basis time is only available with ms accuracy, then as a result of rounding effects, an inaccuracy of 1 ms can occur.  
When referred to r4719, the trigger instant can therefore deviate somewhat.  
**Note:** If the time calculation of the drive can be synchronized with a higher-level control, then this time can be taken from the actual UTC time (r3102 ). Otherwise, the time is based on the system runtime (r2114). |
| Data type: Unsigned32              |                                                                            |       |            |                                                                                                                                             |
| P-Group: Trace and function generator |                                                                            |       |            |                                                                                                                                             |
| Not for motor type:                |                                                                            |       |            |                                                                                                                                             |
| Min                                |                                                                            |       |            |                                                                                                                                             |
| Max                                |                                                                            |       |            |                                                                                                                                             |
| Access level: 3                    |                                                                            |       |            |                                                                                                                                             |

**r4799**  
Trace memory location free / Trace mem free

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
<td>Displays the free memory for the trace in bytes.</td>
<td></td>
<td>Refer to: r4708</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
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</tr>
<tr>
<td>P-Group: Trace and function generator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
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<tr>
<td>Min</td>
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<td>Max</td>
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</tr>
<tr>
<td>Access level: 3</td>
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<td></td>
</tr>
</tbody>
</table>

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### 2.2 List of parameters

#### p4800: Function generator control / FG control

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Min:** 0
- **Max:** 3

**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_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

- **Can be changed:** -
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Min:** 0
- **Max:** 6

**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_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** Trace and function generator
- **Min:** -
- **Max:** -

**Description:**
Displays the status of the function generator.
0 signal: Function generator inactive
1 signal: Function generator running

#### p4810: Function generator mode / FG operating mode

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** Trace and function generator
- **Min:** 0
- **Max:** 99

**Description:**
Sets the operating mode of the function generator.
2 Parameters

2.2 List of parameters

**Value:**
0: Connection at connector output r4818
1: Connection at current setpoint after filter and r4818
2: Connection as disturbing torque and r4818
3: Connection at speed setpoint after filter and r4818
4: Connection at current setpoint before filter and r4818
5: Connection at speed setpoint before filter and r4818
6: Connection for free measurement function r4818 and r4834
99: Connection at physical address and r4818

**Description:**
Sets the physical address where the function generator is to be connected.

**Dependency:**
Only effective when p4810 = 99.

---

### p4812 Function generator physical address / FG phys address

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R,</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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</thead>
<tbody>
<tr>
<td>CU_DC_R_S,</td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>4294967295</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the physical address where the function generator is to be connected.

**Dependency:**
Only effective when p4810 = 99.

---

### p4813 Function generator physical address reference value / FG phys addr ref

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R,</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC_R_S,</td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>1.00</td>
<td>1000000.00</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the reference value for 100 % for referred inputs.

**Dependency:**
Only effective when p4810 = 99.

---

### p4816 Function generator output signal integer number scaling / FG outp integ scal

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R,</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC_R_S,</td>
<td>Data type: Integer32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>P-Group: -</td>
<td>Unit 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>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-2147483648</td>
<td>2147483647</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling for the integer number of the output signal for the function generator.

**Dependency:**
Refer to: r4805, r4817

**Note:**
The parameter can only be changed in the following operating states:
r4805 = 0, 4, 6

---

### r4817 CO: Function generator output signal integer number / FG outp integ no.

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R,</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC_R_S,</td>
<td>Data type: Integer32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>CU_DC_S</td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</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:**
Display and connector output for the integer number of the output signal for the function generator.

**Dependency:**
Refer to: p4816

**Note:**
The value is output independent of the function generator operating mode.
### 2.2 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>
</tr>
</thead>
<tbody>
<tr>
<td>r4818</td>
<td>CO: Function generator output signal / FG outp_sig</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit 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: 0</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>r4818</td>
<td>CO: Function generator output signal / FG outp_sig</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>p4819</td>
<td>BI: Function generator control / FG control</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type:Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit 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: 0</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>p4819</td>
<td>BI: Function generator control / FG control</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>p4820</td>
<td>Function generator signal shape / FG signal shape</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit 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: 0</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>p4820</td>
<td>Function generator signal shape / FG signal shape</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>p4821</td>
<td>Function generator period / FG period duration</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit 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: 0</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>p4821</td>
<td>Function generator period / FG period duration</td>
<td>0.00 [ms]</td>
<td>60000.00 [ms]</td>
<td>1000.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

### Notes
- The value is displayed independently of the function generator mode.
- When the function generator is running, signal generation is stopped with a 0 signal from BI: p4819 and p4800 is set to 0.
- Sets the period of the signal to be generated for the function generator.
- Ineffective when p4820 = 4 (PRBS).
### 2 Parameters

#### 2.2 List of parameters

**p4822**  
**Function generator pulse width / FG pulse width**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</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>Only effective when p4820 = 1 (square-wave).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
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<td>Dyn. index:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Unit 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>0.00 [ms]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>60000.00 [ms]</td>
<td>500.00 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**p4823**  
**Function generator bandwidth / FG bandwidth**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4823</td>
<td>Sets the bandwidth for the signal to be generated for the function generator.</td>
<td>Only effective when p4820 = 4 (PRBS). Refer to: p4830</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
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<td>Dyn. index:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Unit 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>0.0025 [Hz]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>16000.0000 [Hz]</td>
<td>4000.0000 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>

**p4824**  
**Function generator amplitude / FG amplitude**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4824</td>
<td>Sets the amplitude for the signal to be generated for the function generator.</td>
<td>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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Unit 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>-1600.00 [%]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>1600.00 [%]</td>
<td>5.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**p4825**  
**Function generator 2nd amplitude / FG 2nd amplitude**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Trace and function generator</td>
<td>Unit 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>-1600.00 [%]</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>1600.00 [%]</td>
<td>7.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters
#### 2.2 List of parameters

<table>
<thead>
<tr>
<th><strong>p4826</strong> Function generator offset / FG offset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>-1600.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>1600.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>0.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the offset (DC component) of the signal to be generated for the function generator.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Units are dependent on p4810.</td>
</tr>
<tr>
<td>If p4810 = 1, 2, 4: The offset is referred to p2002 (reference current).</td>
</tr>
<tr>
<td>If p4810 = 3, 5: The offset is referred to p2000 (reference speed).</td>
</tr>
<tr>
<td>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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4827</strong> Function generator ramp-up time to offset / FG ramp-up offset</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>0.00 [ms]</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>100000.00 [ms]</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>32.00 [ms]</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the ramp-up time to the offset for the function generator.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4828</strong> Function generator lower limit / FG lower limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>-10000.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>0.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>-100.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the lower limit for the function generator.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4829</strong> Function generator upper limit / FG upper limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>0.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>100000.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>100.00 [%]</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the upper limit for the function generator.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> For p4810 = 2 the limit only applies to the current setpoint, but not the speed setpoint (offset).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>p4830</strong> Function generator time slice cycle / FG time slice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td><strong>P-Group:</strong> Trace and function generator</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
</tr>
<tr>
<td><strong>0.03125 [ms]</strong></td>
</tr>
<tr>
<td><strong>Max</strong></td>
</tr>
<tr>
<td><strong>2.00000 [ms]</strong></td>
</tr>
<tr>
<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>0.12500 [ms]</strong></td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the time slice cycle in which the function generator is called.</td>
</tr>
</tbody>
</table>

---

**SINAMICS DCM**

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### p4831

**Function generator amplitude scaling / FG amplitude scal**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</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>Trace and function generator</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-340.28235E36 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>340.28235E36 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling for the amplitude of the signal waveforms for all output channels. The value can be changed while the function generator is running.

**Index:**
- [0] = First drive for connection
- [1] = Second drive for connection
- [2] = Third drive for connection

**Dependency:**
Refer to: p4810

**Note:**
The signals are only output in the "free measurement function" operating mode (p4810 = 6)

### p4832[0...2]

**Function generator amplitude scaling / FG amplitude scal**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</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>Trace and function generator</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-340.28235E36 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>340.28235E36 [%]</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 function 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>Field</th>
<th>Value</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>Trace and function generator</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>-340.28235E36 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>340.28235E36 [%]</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>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group</td>
<td>Trace and function generator</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>
</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
- [4] = Signal 5

**Dependency:**
Refer to: p4810

**Note:**
The signals are only output in the "free measurement function" operating mode (p4810 = 6)
### 2 Parameters
#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4835[0...4]</td>
<td>Function generator free measurement function scaling / FG fr MeasFct scal</td>
<td>Can be changed: U, T</td>
<td>The parameter cannot be changed when the measurement function has been started (r4706 = 2, 3).</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-200.00000 [%]</td>
<td>200.00000 [%]</td>
<td>100.00000 [%]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p4840[0...1]</th>
<th>MTrace cycle number setting / Cycle number</th>
<th>Can be changed: U, T</th>
<th>The multiple trace is de-activated with a value = 0.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>4294967295</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p4844[0...1]</th>
<th>MTrace cycle actual display / Cycle act display</th>
<th>Can be changed: -</th>
<th>Displays the currently running cycle (including deadtime) of the multiple trace.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p4844[0...1]</th>
<th>MTrace ring buffer files number / Ring buff file qty</th>
<th>Can be changed: T</th>
<th>Sets the number of ring buffer files for the measurement results of the multiple trace.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: Trace and function generator</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Dependency: Refer to: p4840, r4841

r4950 OA DO-specific number / OA DO qty

Can be changed: - Calculated: - Access level: 4

Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: OEM range Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min Max Factory setting
0 16 -

Description: Displays the number of OA applications installed on this drive object.

Dependency: Refer to: r4951, r4952, r4955, p4956, r4957, r4958, r4959, r4960

Note: DO: Drive Object
OA: Open Architecture (OA application)

OA DO-specific identifier total length / OA DO id tot_lgth

Can be changed: - Calculated: - Access level: 4

Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: OEM range Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min Max Factory setting
0 144 -

Description: Displays the total length of the identifiers of the OA applications installed on this drive object.

Dependency: Refer to: r4950, r4952, r4955, p4956, r4957, r4958, r4959, r4960

Note: The identifier of an OA application comprises a maximum of 8 characters plus separator.

OA DO-specific GUID total length / OA DO GUID length

Can be changed: - Calculated: - Access level: 4

Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: OEM range Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min Max Factory setting
0 288 -

Description: Displays the total length of the GUIDs of the OA applications installed on this drive object.

Dependency: Refer to: r4950, r4951, r4955, p4956, r4957, r4958, r4959, r4960

Note: The GUID of an OA application comprises 16 characters plus 1 character major information plus 1 character, minor information.
GUID: Globally Unique IDentifier

r4955[0...n] OA DO-specific identifier / OA DO ident

Can be changed: - Calculated: - Access level: 4

Data type: Unsigned8 Dyn. index: r4951 Func. diagram: -
P-Group: OEM range Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1

Min Max Factory setting
- - -

Description: Displays the identifier of the OA applications installed on this drive object.
r4955[0...8]: Identifier of OA application 1
r4955[0...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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p4956[0...n]</td>
<td><strong>OA DO-specific activation / OA DO act</strong></td>
<td>Can be changed: C1, T</td>
<td>Calculated: -</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: r4950</td>
<td>Calculated: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: OEM range</td>
<td>Unit group: -</td>
<td></td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to activate the OA applications installed on this drive object.
- 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.

| r4957[0...n] | **OA DO-specific version / OA DO version** | Calculated: - | Access level: 4 |
| All objects | Data type: Unsigned32 | Dyn. index: r4950 | Func. diagram: - |
| P-Group: OEM range | Unit group: - | Unit selection: - | |
| Not for motor type: - | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | |
| 0 | 4294967295 | | |

**Description:** Displays the version of the OA applications installed on this drive object.
- 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.

| r4958[0...n] | **OA DO-specific interface version / OA DO interf_vers** | Calculated: - | Access level: 4 |
| All objects | Data type: Unsigned32 | Dyn. index: r4950 | Func. diagram: - |
| P-Group: OEM range | Unit group: - | Unit selection: - | |
| Not for motor type: - | Scaling: - | Expert list: 1 | |
| Min | Max | Factory setting | |
| - | - | | |

**Description:** Displays the interface version of OA applications installed on this drive object.
- r4958[0]: Interface version of OA application 1
- r4958[1]: Interface version of OA applications 2, ...
**Dependency:** Refer to: r4950, r4951, r4952, r4955, p4956, r4957, 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.
### 2 Parameters

#### 2.2 List of parameters

**r4959[0...n]**  
**OA DO-specific GUID / OA DO GUID**  
All objects  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: Unsigned8  
Dyn. index: r4952  
P-Group: OEM range  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max  
Factory setting  

**Description:** Displays the GUIDs of the OA applications installed on this drive object.
- r4959[0...15]: GUID of OA application 1
- r4959[16]: Major information of OA application 1
- r4959[17]: Minor information of OA application 1
- r4959[18...33]: GUID of OA application 2
- r4959[34]: Major information of OA application 2
- r4959[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 DO-specific GUID drive object / OA DO GUID DO**  
All objects  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: Unsigned8  
Dyn. index: r4952  
P-Group: OEM range  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max  
Factory setting  

**Description:** Displays the GUIDs of this 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.

**p4961[0...n]**  
**OA DO-specific logbook module selection / OA DO log module**  
All objects  
Can be changed: T  
Calculated: -  
Access level: 4  
Data type: Unsigned32  
Dyn. index: r4950  
P-Group: OEM range  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max  
Factory setting  
0000 hex FFFF FFFF hex 0000 hex  

**Description:** Only for service purposes.

**r4975**  
**OA invalid number / OA inv no.**  
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S  
Can be changed: -  
Calculated: -  
Access level: 4  
Data type: Unsigned16  
Dyn. index: -  
P-Group: OEM range  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min Max  
Factory setting  

**Description:** Displays the number of invalid OA applications installed on the memory card/device memory.

**Dependency:** Refer to: r4976, r4978, r4979
2 Parameters

2.2 List of parameters

Note: OA: Open Architecture (OA application)

**r4976**
- **Description:** Displays the total length of the IDs of all the invalid OA applications installed on the memory card/device memory.
- **Dependency:** Refer to: r4975, r4978, r4979
- **Note:** The identifier of an invalid OA application comprises a maximum of 8 characters plus separator.

**r4978[0...n]**
- **Description:** Displays the IDs of all the invalid OA applications installed on the memory card/device memory.
- **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]**
- **Description:** Displays the error code of the invalid OA applications installed on the memory card/device memory.
- **Dependency:** Refer to: r4975, r4976, r4978
- **Notice:** If there is no invalid OA application, then it is not possible to access an index.
- **Note:** The value in the error code must be interpreted in binary form. The bits have the following meaning:
  - 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).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r4985</strong> OA number / OA no</td>
<td>Displays the number of OA applications installed on the memory card/device memory.</td>
<td>Refer to: r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4993, r4994</td>
<td>OA: Open Architecture (OA application)</td>
</tr>
<tr>
<td><strong>r4986</strong> OA identifier total length / OA id tot_length</td>
<td>Displays the total length of the IDs of all the OA applications installed on the memory card/device memory.</td>
<td>Refer to: r4985, r4987, r4988, r4989, r4990, r4991, r4992, r4993, r4994</td>
<td>The identifier of an OA application comprises a maximum of 8 characters plus separator.</td>
</tr>
<tr>
<td><strong>r4987</strong> OA GUID total length / OA GUID tot_length</td>
<td>Displays the total length of the GUIDs of all the OA applications installed on the memory card/device memory.</td>
<td>Refer to: r4985, r4986, r4988, r4989, r4990, r4991, r4992, r4993, r4994</td>
<td>The GUID of an OA application comprises 16 characters plus 1 character major information plus 1 character, minor information. GUID: Globally Unique IDentifier</td>
</tr>
<tr>
<td><strong>r4988[0...n]</strong> OA identifier / OA ID</td>
<td>Displays the IDs of all the OA applications installed on the memory card/device memory.</td>
<td>Refer to: r4985, r4986, r4987, r4989, r4990, r4991, r4992, r4993, r4994</td>
<td>If there is no OA application, then it is not possible to access an index.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

r4989[0...n] OA version / OA version

| Data type: | Unsigned32 |
| P-Group:  | OEM range |
| Not for motor type: | - |
| Min | Max |

**Description:** Displays the version of all the OA applications installed on the memory card/device memory.

- r4989[0]: Version of OA application 1
- r4989[1]: Version of OA application 2, ...

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4990, r4991, r4992, r4993, r4994

**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.

r4990[0...n] OA interface version / OA interf_vers

| Data type: | Unsigned32 |
| P-Group:  | OEM range |
| Not for motor type: | - |
| Min | Max |

**Description:** Displays the interface version of all the OA applications installed on the memory card/device memory.

- r4990[0]: Interface version of OA application 1
- r4990[1]: Interface version of OA applications 2, ...

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4990, r4991, r4992, r4993, r4994

**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.

r4991[0...n] OA GUID / OA GUID

| Data type: | Unsigned8 |
| P-Group:  | OEM range |
| Not for motor type: | - |
| Min | Max |

**Description:** Displays the GUID of all the OA applications installed on the memory card/device memory.

- r4991[0...15]: GUID of OA application 1
- r4991[16]: Major information of OA application 1
- r4991[17]: Minor information of OA application 1
- r4991[18...33]: GUID of OA application 2
- r4991[34]: Major information of OA application 2
- r4991[35]: Minor information of OA application 2, ...

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4990, r4992, r4993, r4994

**Notice:** If there is no OA application, then it is not possible to access an index.
### 2 Parameters

#### 2.2 List of parameters

**r4992[0...n]**

**OA GUID ES / OA GUID ES**

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 4

**Data type:** Unsigned8  
**Dyn. index:** r4987  
**Func. diagram:** -

- **P-Group:** OEM range  
- **Unit group:** -  
- **Unit selection:** -

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

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

**Description:** Displays the GUID of all the OA applications installed on the memory card/device memory.

- r4992[0...15]: GUID of OA application 1  
- r4992[16]: Major information of OA application 1  
- r4992[17]: Minor information of OA application 1  
- r4992[18...33]: GUID of OA application 2  
- r4992[34]: Major information of OA application 2  
- r4992[35]: Minor information of OA application 2, ...

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4993, r4994

**Notice:** If there is no OA application, then it is not possible to access an index.

**r4993[0...n]**

**OA activation status / OA act stat**

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 4

**Data type:** Integer16  
**Dyn. index:** r4985  
**Func. diagram:** -

- **P-Group:** OEM range  
- **Unit group:** -  
- **Unit selection:** -

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

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

**Description:** Displays the activation status of the OA applications installed on the memory card/device memory.

- r4993[0]: Activates OA application 1  
- r4993[1]: Activates OA application 2, ...

**Value:**  
0: OA application inactive  
1: OA application active

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4994

**Notice:** If there is no OA application, then it is not possible to access an index.

**r4994[0...n]**

**OA properties / OA property**

- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 4

**Data type:** Unsigned32  
**Dyn. index:** r4985  
**Func. diagram:** -

- **P-Group:** OEM range  
- **Unit group:** -  
- **Unit selection:** -

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

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

**Description:** Displays the properties of all the OA applications installed on the memory card/device memory.

- r4994[0]: Version of OA application 1  
- r4994[1]: Version of OA application 2, ...

**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>Properties diagnostics bit 0</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Properties diagnostics bit 1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Properties diagnostics bit 2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>OEM</td>
<td>No</td>
<td>Yes</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Properties diagnostics bit 4</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Properties diagnostics bit 5</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r4985, r4986, r4987, r4988, r4989, r4990, r4991, r4992, r4993

**Notice:** If there is no OA application, then it is not possible to access an index.

**Note:** The parameter is only for internal Siemens diagnostics.
2 Parameters

2.2 List of parameters

### r7758[0...19]
**KHP Control Unit serial number / KHP CU ser_no**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned8
- **Dyn. index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**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

### p7759[0...19]
**KHP Control Unit reference serial number / KHP CU ref ser_no**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned8
- **Dyn. index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**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
- The OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".
- 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.

### r7760
**Write protection/know-how protection status / Wr_prot/KHP stat**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 3
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** -
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:**
Displays the status for the write protection and know-how protection.

**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>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>Extended copy protection is active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Basic copy protection is active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Trace and measuring functions for diagnostic</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>purposes active</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p7761, p7765, p7766, p7767, p7768

**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/Control Units. This bit is only set if know-how protection is active and p7765 bit 00 is set.

Re bit 05:
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 in p7765 bit 01 is set and not bit 00.

Re bit 06:
When know-how protection is activated, the drive data can be traced using the device trace function. This bit is only set if know-how protection is active and in p7765.2 is set.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7761</td>
<td>Write protection / Write protection</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Dependency: Refer to: p7764
Note: KHP: Know-How Protection
Even if know-how protection is set, parameters in this list can be read and written to.

<table>
<thead>
<tr>
<th>p7764[0...n]</th>
<th>KHP OEM exception list / KHP OEM excep list</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> p7763 <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0</td>
<td>65535 [0] 7766 [1...499] 0</td>
</tr>
</tbody>
</table>

**Description:** OEM exception list (p7764[0...n]) for setting parameters that should be excluded from know-how protection.

Dependency: The number of indices depends on p7763.
Note: Refer to: p7763

<table>
<thead>
<tr>
<th>p7764[0...n]</th>
<th>KHP OEM exception list / KHP OEM excep list</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> p7763 <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0</td>
<td>65535 0</td>
</tr>
</tbody>
</table>

**Description:** OEM exception list (p7764[0...n]) for setting parameters that should be excluded from know-how protection.

Dependency: The number of indices depends on p7763.
Note: Refer to: p7763

<table>
<thead>
<tr>
<th>p7765</th>
<th>KHP configuration / KHP config</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 3</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> - <strong>Func. diagram:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>- 0000 bin</td>
</tr>
</tbody>
</table>

**Description:** Configuration settings for know-how protection.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Extended copy protection - linked to the memory card and CU Yes No -
01 Basic copy protection - linked to the memory card Yes No -
02 Permit trace and measuring functions for diagnostic purposes Yes No -

Dependency: Refer to: p7766, p7767, p7768
2 Parameters

2.2 List of parameters

Note:
KHP: Know-How Protection
For copy protection, the serial numbers of the memory card and/or Control Unit are checked.
The memory card copy protection and preventing data to be traced are only effective when the know-how protection has been activated.
Re bit 00, 01:
If both bits are inadvertently set to 1 (e.g. at the BOP), then the setting of bit 0 applies.
There is no copy protection if both bits are set to 0.

<table>
<thead>
<tr>
<th>p7766[0...29]</th>
<th>KHP password input / KHP password input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC</strong>, <strong>CU_DC_R</strong>, <strong>CU_DC_R_S</strong>, <strong>CU_DC_S</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type</strong>: Unsigned16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>P-Group</strong>: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Unit group</strong>: -</td>
<td>Calc. index: -</td>
</tr>
<tr>
<td><strong>Not for motor type</strong>: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Min</strong>: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td><strong>Max</strong>: -</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>[29]</strong> = 0 dec (completes the entry)</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the password for know-how protection.
Example of a password:
123aBc = 49 50 51 97 66 99 dec (ASCII characters)
[0] = character 1 (e.g. 49 dec)
[1] = character 2 (e.g. 50 dec)
...
[5] = character 6 (e.g. 99 dec)
[29] = 0 dec (completes the entry)

Dependency:
Refer to: p7767, p7768

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.
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).

Note:
KHP: Know-How Protection
When reading, p7766[0...29] = 42 dec (ASCII character = "**") is displayed.
Parameters with the "KHP_WRITE_NO_LOCK" attribute are not involved in the know-how protection.
Parameters with the "KHP_ACTIVE_READ" attribute can be read even when know-how protection is activated.
A product-specific list of these parameters is also available in the corresponding List Manual.

<table>
<thead>
<tr>
<th>p7767[0...29]</th>
<th>KHP password new / KHP passw new</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC</strong>, <strong>CU_DC_R</strong>, <strong>CU_DC_R_S</strong>, <strong>CU_DC_S</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type</strong>: Unsigned16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>P-Group</strong>: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td><strong>Unit group</strong>: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td><strong>Not for motor type</strong>: -</td>
<td>Calc. index: -</td>
</tr>
<tr>
<td><strong>Min</strong>: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Max</strong>: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td><strong>[29]</strong> = 0 dec (completes the entry)</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the new password for know-how protection.

Dependency:
Refer to: p7766, p7768

Note:
KHP: Know-How Protection
When reading, p7767[0...29] = 42 dec (ASCII character = "**") is displayed.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p7768[0...29]</td>
<td>KHP password confirmation / KHP passw confirm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p7769[0...20]</td>
<td>KHP memory card reference serial number / KHP mem ref ser_no</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p7770</td>
<td>NVRAM action / NVRAM action</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**p7768[0...29] KHP password confirmation / KHP passw confirm**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Access level:** 3
- **Dependency:** Refer to: p7766, p7767
- **Note:** KHP: Know-How Protection

Description: Confirms the new password for know-how protection.

**Dependency:**

- Refer to: p7766, p7767

**Note:** KHP: Know-How Protection

When reading, p7768[0...29] = 42 dec (ASCII character = **) is displayed.

**p7769[0...20] KHP memory card reference serial number / KHP mem ref ser_no**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** T
- **Data type:** Unsigned8
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Access level:** 3
- **Dependency:** Refer to: p7765, p7766, p7767, p7768
- **Note:** KHP: Know-How Protection

Description: Sets the reference serial number for the memory card.

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

- The OEM may only change this parameter for the use case "Sending encrypted SINAMICS data".
- 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.

**p7770 NVRAM action / NVRAM action**

- **TM150, TM15DI_DO, TM31**
- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 3
- **Access level:** 3
- **Dependency:**

**Description:** Sets the action to be executed for NVRAM data.

At the end of the action the value is automatically set to 0.

**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.
2 Parameters
2.2 List of parameters

p7775 | NVRAM data backup/import/delete / NVRAM backup
--- | ---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: C1, U, T
Data type: Integer16
P-Group: -
Not for motor type: -
Min | Max
0 | 17
Value: 0: Inactive
1: NVRAM data backup to memory card
2: Import NVRAM data from the memory card
3: Delete NVRAM data in the device
10: Error when clearing
11: Error when backing up, memory card not available
12: Error when backing up, insufficient memory space
13: Error when backing up
14: Error when importing, memory card not available
15: Error when importing, checksum error
16: Error when importing, no NVRAM data available
17: Error when importing
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
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).

p7820 | DRIVE-CLiQ component component number / DQ compo_no
--- | ---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: U, T
Data type: Unsigned16
P-Group: -
Not for motor type: -
Min | Max
0 | 65535
Value: 0: 65535
Access level: 4
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 / DQ para_no
--- | ---
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S | Can be changed: U, T
Data type: Unsigned16
P-Group: -
Not for motor type: -
Min | Max
0 | 65535
Value: 0: 65535
Access level: 4
Description: Sets the parameter number to access a parameter of a DRIVE-CLiQ component.
Dependency: Refer to: p7820, p7822, r7823
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p7822</strong></td>
<td>DRIVE-CLiQ component parameter index / DQ para_index</td>
<td>Sets the parameter index to access a parameter of a DRIVE-CLiQ component. Refer to: p7820, p7821, r7823</td>
</tr>
<tr>
<td><strong>r7823</strong></td>
<td>DRIVE-CLiQ component read parameter value / Read DQ value</td>
<td>Displays the parameter value read from the DRIVE-CLiQ component. Refer to: p7820, p7821, p7822</td>
</tr>
<tr>
<td><strong>r7825[0...6]</strong></td>
<td>DRIVE-CLiQ component versions / DQ comp version</td>
<td>Displays the firmware and EEPROM versions of the DRIVE-CLiQ component selected using p7828[1]. Refer to: p7828</td>
</tr>
<tr>
<td><strong>p7826</strong></td>
<td>Firmware update automatic / FW update auto</td>
<td>Sets the behavior for the automatic firmware update of the DRIVE-CLiQ components.</td>
</tr>
</tbody>
</table>

**Details for p7822**
- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 65535
- **Factory setting:** 0
- **Dependency:** Refer to: p7820, p7821, r7823

**Details for r7823**
- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Dependency:** Refer to: p7820, p7821, p7822

**Details for r7825[0...6]**
- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -
- **Dependency:** Refer to: p7828

**Details for p7826**
- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 2
- **Factory setting:** 1
- **Dependency:** Refer to: p7820, p7821, r7823, p7822, r7825[0...6], r7828
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Value:** | 0: Deactivated  
1: Upgrade and downgrade  
2: Upgrade |
| **Notice:** | If this parameter is changed, it only becomes effective the next time that the drive system boots. |
| **Note:** | The firmware is automatically updated when the system boots. The boot can take several minutes. After the update has been completed, it is necessary to carry out a new POWER ON (power-down/power-up) for the components involved. The firmware update procedure is displayed as follows:  
Control Unit (LED RDY):  
Flashes yellow with 0.5 Hz --> firmware is being updated.  
Flashing yellow with 2 Hz --> POWER ON is required for the components involved.  
Components involved:  
Flashing red/green with 0.5 Hz --> firmware is being updated.  
Flashing red/green with 2 Hz --> POWER ON of the components is required.  
Only components from firmware version 2.5 support the red/green flashing at 2 Hz. |

### r7827

**Firmware update progress display / FW update progress**

<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><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:** Displays the progress when updating the firmware of the DRIVE-CLiQ components.

### p7828[0...1]

**Firmware download component number / FW downl comp_no**

<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><strong>Data type:</strong></td>
<td>Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>399</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the component number for the required DRIVE-CLiQ component.  
Index 0:  
Component number of the DRIVE-CLiQ component for which a firmware download is to be made.  
Index 1:  
Component number of the DRIVE-CLiQ component for which the reference firmware version, saved in r7825 on the memory card/device memory, is to be displayed.  

**Index:**  
[0] = Firmware download  
[1] = Reference firmware version  
**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.

### p7829

**Activate firmware download / FW download act**

<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><strong>Data type:</strong></td>
<td>Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-1</td>
<td>999</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Activating the firmware download for the DRIVE-CLiQ components specified in p7828.
2 Parameters

2.2 List of parameters

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.

Additional values:
Only for internal Siemens troubleshooting.

Dependency:
Refer to: p7828

Note:
p7829 is automatically set to 0 after the firmware has been successfully downloaded.
The new firmware only becomes active at the next system run-up.

---

**p7830**

Telegram diagnostics selection / Telegr diag sel

<table>
<thead>
<tr>
<th>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed:</td>
</tr>
<tr>
<td>Data type:</td>
</tr>
<tr>
<td>P-Group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min:</td>
</tr>
<tr>
<td>Max:</td>
</tr>
</tbody>
</table>

Description: Selects a telegram whose contents should be shown in r7831 ... r7836.

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...23]**

Telegram diagnostics signals / Telegr diag sig

Can be changed: -
Data type: Integer16
P-Group: -
Not for motor type: -
Min: 0
Max: 15157

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
2 Parameters

2.2 List of parameters

10504: ENC_ID_SUBTRACE_CALC_TIMES
10505: ENC_ID_SYN_Phase
10516: ENC_ID_ADC_TRAC_A
10517: ENC_ID_ADC_TRAC_B
10518: ENC_ID_ADC_TRAC_C
10519: ENC_ID_ADC_TRAC_D
10520: ENC_ID_ADC_TRAC_A_SAFETY
10521: ENC_ID_ADC_TRAC_B_SAFETY
10523: ENC_ID_ADC_TEMP_1
10524: ENC_ID_SUBTRACE_TRACK_A
10525: ENC_ID_SUBTRACE_TRACK_B
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
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
10550: ENC_ID_SUBTRACE_AMPL
10563: ENC_ID_ENCODER_TEMP
10564: ENC_SELFTEMP_ACT
10565: ENC_ID_MOTOR_TEMP_TOP
10566: ENC_ID_MOTOR_TEMP_1
10567: ENC_ID_MOTOR_TEMP_1_COD
10569: ENC_ID_MOTOR_TEMP_2_COD
10571: ENC_ID_MOTOR_TEMP_3_COD
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
10601: ENC_ID_SUBTRACE_ANGLE
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
10669: ENC_ID_SUB_STATE
10676: ENC_ID_COUNTCORR_SAW_VALUE
10677: ENC_ID_COUNTCORR_ABS_VALUE
10678: ENC_ID_SAWTOOTH_CORR
10680: ENC_ID_SM_XIST1_CORRECTED_QUADRANTS
10692: ENC_ID_RESISTANCE_CALIB_INSTANT
10693: ENC_ID_SERPROT_POS
10700: ENC_ID_AB_VIOL_COUNT
### r7832[0...23] Telegram diagnostics numerical format / Telegr diag format

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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

### r7833[0...23] Telegram diagnostics unsigned / Telegr diag unsign

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data type</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Telegram diagnostics signed / Telegr diag sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: Integer32</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>r7834[0...23]</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Parameter to display a DSA signal in the signed-integer format.</td>
</tr>
<tr>
<td>The associated signal number is represented at the appropriate index in r7831.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Telegram diagnostics real / Telegr diag real</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>r7835[0...23]</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Parameter to display a DSA signal in the float format.</td>
</tr>
<tr>
<td>The associated signal number is represented at the appropriate index in r7831.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Telegram diagnostics unit / Telegr diag unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>r7836[0...23]</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the units of a DSA signal.</td>
</tr>
<tr>
<td>The associated signal number is represented at the appropriate index in r7831.</td>
<td></td>
</tr>
</tbody>
</table>

**Value:**

-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/sec^2 or U/sec^2
8: m/sec^2
9: U/sec^2
10: m/sec^3 or U/sec^3
11: m/sec^3
12: U/sec^3
13: sec
14: 16.667 / sec
15: mm/revolution
16: ACX_UNIT_COMPENSATION_CORR
18: Newton
19: Kilogram
20: Kilogram meter*2
21: Percent
22: Hertz
23: Volt peak-to-peak
24: Amps peak-to-peak
25: Degrees Celsius
26: Degrees
28: Millimeter or degrees
2 Parameters

2.2 List of parameters

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
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 amp rms
85: Micrometers / revolution
90: Tenth of a second
91: Hundredths of a second
92: 10 microseconds
93: Pulses
94: 256 pulses
95: Tenth 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
2 Parameters

2.2 List of parameters

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)
127: Henry
128: Kelvin
129: Hours
130: Kilohertz
131: Milliamperes peak-to-peak
132: Millifarads
133: Meter
135: Kilowatt hours
136: Percent
137: Amps / Volt
138: Volt
139: Millivolts
140: Microvolts
141: Amps
142: Milliamperes
143: Micro amps
144: Milliamperes rms
145: Millimeter
146: Nanometer
147: Joules

<table>
<thead>
<tr>
<th>r7843[0...20]</th>
<th>Memory card serial number / Mem_card ser.no</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>

Description:
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.

Dependency:
Refer to: p9920, p9921

Notice:
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Note:
Example: displaying the serial number for a memory card:

- r7843[0] = 49 dec --> ASCII characters = "1" --> serial number, character 1
- r7843[1] = 49 dec --> ASCII characters = "1" --> serial number, character 2
- r7843[2] = 49 dec --> ASCII characters = "1" --> serial number, character 3
- r7843[3] = 57 dec --> ASCII characters = "9" --> serial number, character 4
- r7843[4] = 50 dec --> ASCII characters = "2" --> serial number, character 5
- r7843[5] = 51 dec --> ASCII characters = "3" --> serial number, character 6
- r7843[6] = 69 dec --> ASCII characters = "E" --> serial number, character 7
- r7843[7] = 0 dec --> ASCII characters = " " --> serial number, character 8
... 
- r7843[19] = 0 dec --> ASCII characters = " " --> serial number, character 20
- r7843[20] = 0 dec

Serial number = 111923E
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th><strong>r7844[0...2]</strong></th>
<th><strong>Device memory firmware version / Dev_mem FW</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong>&lt;br&gt;<strong>CU_DC_R_S,</strong>&lt;br&gt;<strong>CU_DC_S</strong></td>
<td><strong>Can be changed:</strong> -&lt;br&gt;<strong>Data type:</strong> Unsigned32&lt;br&gt;<strong>P-Group:</strong> -&lt;br&gt;<strong>Not for motor type:</strong> -&lt;br&gt;<strong>Min</strong>&lt;br&gt;<strong>Max</strong></td>
</tr>
</tbody>
</table>

**Description:** Displays the version of the firmware stored on the device memory.

**Index:**
- [0] = Internal
- [1] = External
- [2] = Parameter backup

**Note:**
- **Re index 0:** Displays the internal firmware version (e.g. 01402315).
- **This firmware version is the version of the 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. 01040000 -> 1.4).
- **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.

<table>
<thead>
<tr>
<th><strong>r7850[0...n]</strong></th>
<th><strong>Drive object operational/not operational / DO ready for oper</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong>&lt;br&gt;<strong>CU_DC_R_S,</strong>&lt;br&gt;<strong>CU_DC_S</strong></td>
<td><strong>Can be changed:</strong> -&lt;br&gt;<strong>Data type:</strong> Integer16&lt;br&gt;<strong>P-Group:</strong> -&lt;br&gt;<strong>Not for motor type:</strong> -&lt;br&gt;<strong>Min</strong></td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th><strong>p7852</strong></th>
<th><strong>Number of indices for r7853 / Qty indices r7853</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong>&lt;br&gt;<strong>CU_DC_R_S,</strong>&lt;br&gt;<strong>CU_DC_S</strong></td>
<td><strong>Can be changed:</strong> U, T&lt;br&gt;<strong>Data type:</strong> Unsigned16&lt;br&gt;<strong>P-Group:</strong> -&lt;br&gt;<strong>Not for motor type:</strong> -&lt;br&gt;<strong>Min</strong></td>
</tr>
</tbody>
</table>

**Description:** Displays the number of indices for r7853[0...n].

**Dependency:**
- Refer to: r7853

**Note:**
- The values are valid if all available Control Units adopt the "Initialization finished" state (r3988 = 800) following power-up.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>r7853[0...n]</th>
<th>Component available/not available / Comp present</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</td>
<td><strong>Dyn. index:</strong> p7852&lt;br&gt;<strong>Func. diagram:</strong> -&lt;br&gt;<strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit group:</strong> -&lt;br&gt;<strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min:</strong> Max&lt;br&gt;<strong>Factory setting:</strong>&lt;br&gt;<strong>Calculation:</strong> FFFF hex&lt;br&gt;<strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the component and whether this component is currently present. High byte: Component number&lt;br&gt;Low byte: 0/1 (not available/available)</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p7852</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The values are valid if all available Control Units adopt the &quot;Initialization finished&quot; state (r3988 = 800) following power-up.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p7857</th>
<th>Sub-boot mode / Sub-boot mode</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S_TM150, TM15DI_DO, TM31</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>Dyn. index:</strong> -&lt;br&gt;<strong>Func. diagram:</strong> -&lt;br&gt;<strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit group:</strong> -&lt;br&gt;<strong>Expert list:</strong> 1</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min:</strong> Max&lt;br&gt;<strong>Factory setting:</strong>&lt;br&gt;<strong>Calculation:</strong> 1&lt;br&gt;<strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the mode for the sub-boot.</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
<td>0: Sub-boot manual&lt;br&gt;1: Sub-boot automatic&lt;br&gt;2: Sub-boot automatic&lt;br&gt;1: Sub-boot automatic&lt;br&gt;0: Sub-boot manual</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>For p7857 = 0 (manual sub-boot) the following applies: The parameter should be set to 1 to start the sub-boot.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p7859[0...199]</th>
<th>Component number global / Comp_no global</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
<td>Can be changed: U, T Calculated: - Access level: 4</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>Dyn. index:</strong> -&lt;br&gt;<strong>Func. diagram:</strong> -&lt;br&gt;<strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit group:</strong> -&lt;br&gt;<strong>Expert list:</strong> 0</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Min:</strong> Max&lt;br&gt;<strong>Factory setting:</strong>&lt;br&gt;<strong>Calculation:</strong> 32767&lt;br&gt;<strong>Access level:</strong> 4</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>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</td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The parameter is not influenced by setting the factory setting.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7867</td>
<td>Status/configuration changes global / Changes global</td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</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></td>
<td>Displays status and configuration changes of all of the drive objects in the complete unit.</td>
</tr>
<tr>
<td></td>
<td>When changing the status or the configuration of the Control Unit or a drive object, the value of this parameter is incremented.</td>
</tr>
<tr>
<td></td>
<td>Refer to: r7868, r7869, r7870</td>
</tr>
<tr>
<td>r7868[0...24]</td>
<td>Configuration changes drive object reference / Config_chng DO ref</td>
</tr>
<tr>
<td></td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</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></td>
<td>Reference to the drive objects whose configuration has changed.</td>
</tr>
<tr>
<td></td>
<td>Index 0: When changing one of the following indices, then the value in this index is increased.</td>
</tr>
<tr>
<td></td>
<td>Index 1...n: The drive object with object number in p0101[n-1] has changed its configuration.</td>
</tr>
<tr>
<td></td>
<td>Example: r7868[3] was incremented since the last time it was read.</td>
</tr>
<tr>
<td></td>
<td>--&gt; the configuration of the drive object with object number in p0101[2] was changed.</td>
</tr>
<tr>
<td></td>
<td>Index:</td>
</tr>
<tr>
<td></td>
<td>[0] = Sum of the following indices</td>
</tr>
<tr>
<td></td>
<td>[1] = Object number in p0101[0]</td>
</tr>
<tr>
<td></td>
<td>[17] = Object number in p0101[16]</td>
</tr>
<tr>
<td></td>
<td>[18] = Object number in p0101[17]</td>
</tr>
<tr>
<td></td>
<td>[19] = Object number in p0101[18]</td>
</tr>
<tr>
<td></td>
<td>[22] = Object number in p0101[21]</td>
</tr>
<tr>
<td></td>
<td>[23] = Object number in p0101[22]</td>
</tr>
<tr>
<td></td>
<td>[24] = Object number in p0101[23]</td>
</tr>
<tr>
<td></td>
<td>Dependency: Refer to: p0101, r7867, r7871</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Access Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r7869[0...24]</td>
<td>Status changes drive object reference / Status_chng DO ref</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>r7870[0...7]</td>
<td>Configuration changes global / Config_chng global</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scaling: -</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expert list: 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**

Reference to the drive objects whose status has changed.

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

---

**r7869[0...24]**

**Status changes drive object reference / Status_chng DO ref**

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

Can be changed: -

Calculated: -

Access level: 4

Data type: Unsigned32

Dyn. index: -

Func. diagram: -

P-Group: -

Unit group: -

Unit selection: -

Not for motor type: -

Scaling: -

Expert list: 1

Min

Max

Factory setting

---

**r7870[0...7]**

**Configuration changes global / Config_chng global**

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

Can be changed: -

Calculated: -

Access level: 4

Data type: Unsigned32

Dyn. index: -

Func. diagram: -

P-Group: -

Unit group: -

Unit selection: -

Not for motor type: -

Scaling: -

Expert list: 1

Min

Max

Factory setting

---

**Description:**

Displays the configuration changes of all of the drive objects in the complete unit.

**Index:**

[0] = Sum of the following indices

[1] = r7871[0] of a drive object

[2] = p0101 or r0102

[3] = PROFINET configuration (p0978)

[4] = DRIVE-CLiQ actual topology (r9900 or r9901)

[5] = DRIVE-CLiQ target topology (r9902 or r9903)

[6] = DRIVE-CLiQ sockets (p0109)

[7] = OA applications
## 2 Parameters

### 2.2 List of parameters

#### Dependency:
Refer to: r7867, r7871

#### 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 r7871[0] on a drive object, the value in this index is incremented.
- Re index 2:
  - Drive object, configuration unit. When changing either p0101 or r0102, the value in this index is incremented.
- Re index 3:
  - PROFIBUS configuration unit. When changing p0978, the value in this index is incremented.
- Re index 4:
  - DRIVE-CLiQ actual topology. When changing either r9900 or r9901, the value in this index is incremented.
- Re index 5:
  - DRIVE-CLiQ target topology. When changing either p9902 or p9903, the value in this index is incremented.
- Re index 6:
  - DRIVE-CLiQ sockets. When changing p0109, the value in this index is incremented.
- Re index 7:
  - OA applications. When changing OA applications, the value in this index is incremented.

#### r7871[0...15]

**Configuration changes drive object / Config_chng DO**

<table>
<thead>
<tr>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Min**  
**Max**  
**Scaling:** -  
**Expert list:** 1  
**Factory setting:** -  

**Description:** Displays the configuration changes on the drive object.

**Index:**
- [0] = Sum of the following indices
- [1] = p0010, p0107, 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, p0108
- [12] = Write protection and know-how protection status
- [13] = Reserved
- [14] = Reserved
- [15] = Reserved

**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 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.
2 Parameters

2.2 List of parameters

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.

Re index 12:
Drive object configuration. When activating/deactivating write protection or know-how protection, the value in this index is incremented.

r7871[0...15] Configuration changes drive object / Config_chng DO

Can be changed: -
Calculated: -
Access level: 4

Data type: Unsigned32
Dyn. index: -
Func. diagram: -

P-Group: -
Unit 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, p0108, p0171, p0172 or p0173
[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, p0108, p0171, p0172 or p0173
[12] = Write protection and know-how protection status
[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:
Drive object commissioning: When changing p0010, p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

Re index 1:
Drive object name. When changing p0199, the value in this index is incremented.

Re index 2:
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.
2 Parameters
2.2 List of parameters

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 p0107, p0108, p0171, p0172 or p0173, the value in this index is incremented.

Re index 15:
Encoder configuration. When changing p0400, the value in this index is incremented.

---

**r7872[0...3]**

<table>
<thead>
<tr>
<th>Drive object status changes / DO stat_chng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All objects</strong></td>
</tr>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Unit selection: -</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>Max</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the status changes on the drive object.

**Index:**
- [0] = Sum of the following indices
- [1] = Faults (r0944)
- [2] = Alarms (r2121)
- [3] = Safety messages (r9744)

**Dependency:** Refer to: r7869

**Note:**
- When changing one of the following indices, then the value in this index is incremented.
- Re index 0:
  - Drive object faults. When changing r0944, the value in this index is incremented.
- Re index 1:
  - Drive object alarms. When changing r2121, the value in this index is incremented.
- Re index 3:
  - Drive object safety messages. When changing r9744, the value in this index is incremented.

---

**p7900[0...23]**

<table>
<thead>
<tr>
<th>Drive objects priority / DO priority</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group: -</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Unit selection: -</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>Max</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**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 type as follows: CU_DC, DC_CTRL, TM
- 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.
2 Parameters

2.2 List of parameters

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.

\( r7901[0...63] \) Sampling times / t_sample

**CU_DC, CU_DC_R, CU_DC_S**

Can be changed: -
Data type: FloatingPoint32
P-Group: -
Not for motor type: -
Min - [µs]
Max - [µs]

Calculated: -
Dyn. index: -
Unit group: -
Scaling: -
Expert list: 1
Factory setting

Description: Displays the sampling times currently present on the drive unit.

- \( r7901[0...63] \): sampling times of hardware time slices.
- \( r7901[64...82] \): sampling times of software time slices.
- \( r7901[x] = 0 \) means that in the associated time slice, no methods have been registered.

Note: The basis for the software time slices is \( T_{NRK} = p7901[15] \).

\( r7903 \) Hardware sampling times still assignable / HW t_samp free

**CU_DC, CU_DC_R, CU_DC_S**

Can be changed: -
Data type: Unsigned16
P-Group: -
Not for motor type: -
Min -
Max -

Calculated: -
Dyn. index: -
Unit group: -
Scaling: -
Expert list: 1
Factory setting

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 or FBLOCKS.

Note: OA: Open Architecture
2 Parameters

2.2 List of parameters

### p8550 - AOP LOCAL/REMOTE / AOP LOCAL/REMOTE

- **CUxDC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Access level:** 4

**Description:** Setting for saving the actual configuration of the Advanced Operator Panel (AOP).

**Dependency:** Refer to: p0015

**Note:** For a value = 9999999, the following applies: The read operation is still running.

**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>
<tr>
<td>02</td>
<td>Change in oper</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>OFF acts like OFF1</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>OFF acts like OFF2</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>OFF acts like OFF3</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Reserved</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>CW/CCW active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Jog active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Save speed setpoint</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Inhibit operation</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Inhibit parameterization</td>
<td>Yes</td>
<td>No</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:** -

**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:** -

**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:** -

**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.
## 2 Parameters

### 2.2 List of parameters

#### r8573[0...39]  
**Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set**

<table>
<thead>
<tr>
<th></th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</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></th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the macro currently being executed on the drive object.

**Dependency:** Refer to: p0015, p0700, p1000, p1500, r8570, r8571, r8572, r8573

#### p8805  
**Identification and maintenance 4 configuration / I&M 4 config**

<table>
<thead>
<tr>
<th></th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration for the content of identification and maintenance 4 (I&M 4, p8809).

**Value:**
- 0: Standard value for I&M 4 (p8809)
- 1: User value for I&M 4 (p8809)

**Dependency:** For p8805 = 0, if the user writes at least one value in p8809[0...53], then p8805 is automatically set to = 1. When p8805 is reset = 0, then the content of the factory setting is set in p8809.

**Note:**
- Re p8805 = 0:
  - PROFINET I&M 4 (p8809) contains the information for the SI change tracking.
  - Re p8805 = 1:
  - PROFINET I&M 4 (p8809) contains the values written by the user.

#### p8806[0...53]  
**Identification and Maintenance 1 / I&M 1**

<table>
<thead>
<tr>
<th></th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>U, T</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned8</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>
</tbody>
</table>

**Description:** Parameters for the PROFINET data set "Identification and Maintenance 1" (I&M 1).

**Dependency:** Refer to: p8807, p8808

**Notice:** Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).
2 Parameters

2.2 List of parameters

An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Re p8806[0...31]:
System identifier.
Re p8806[32...53]:
Location identifier.

<table>
<thead>
<tr>
<th>p8807[0...15]</th>
<th>Identification and Maintenance 2 / I&amp;M 2</th>
</tr>
</thead>
</table>
| **CU_DC, CU_DC_R,**<br>**CU_DC_R_S,**<br>**CU_DC_S** | **Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Min** | **Access level:** 3  
**Calculated:** -  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Max**  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting** |

Description: Parameters for the PROFINET data set "Identification and Maintenance 2" (I&M 2).

This information is known as "Installation date".

Dependency:
Refer to: p8806, p8808

Note:
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Re p8807[0...15]:
Dates of installation or first commissioning of the (ASCII) device with the following format options.

YYYY-MM-DD
or
YYYY-MM-DD hh:mm
- YYYY: year
- MM: month 01 ... 12
- DD: day 01 ... 31
- hh: hours 00 ... 23
- mm: minutes 00 ... 59

Separators must be placed between the individual data, i.e. a hyphen '-', space ' ' and colon ':'.

<table>
<thead>
<tr>
<th>p8808[0...53]</th>
<th>Identification and Maintenance 3 / I&amp;M 3</th>
</tr>
</thead>
</table>
| **CU_DC, CU_DC_R,**<br>**CU_DC_R_S,**<br>**CU_DC_S** | **Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Min** | **Access level:** 3  
**Calculated:** -  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Max**  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting** |

Description: Parameters for the PROFINET data set "Identification and Maintenance 3" (I&M 3).

This information is known as "Supplementary information".

Dependency:
Refer to: p8806, p8808

Notice:
Only characters belonging to the standard ASCII character set may be used (32 dec to 126 dec).

Note:
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

Re p8808[0...53]:
Any supplementary information and comments (ASCII).

<table>
<thead>
<tr>
<th>p8809[0...53]</th>
<th>Identification and Maintenance 4 / I&amp;M 4</th>
</tr>
</thead>
</table>
| **CU_DC, CU_DC_R,**<br>**CU_DC_R_S,**<br>**CU_DC_S** | **Can be changed:** U, T  
**Data type:** Unsigned8  
**P-Group:** -  
**Not for motor type:** -  
**Min** | **Access level:** 3  
**Calculated:** -  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Max**  
**Func. diagram:** -  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting** |

Description: Parameters for the PROFINET data set "Identification and Maintenance 4" (I&M 4).

This information is known as "Signature".
### 2 Parameters

#### 2.2 List of parameters

**Dependency:**
- This parameter is preassigned as standard (see note).
- After writing information to p8809, p8805 is automatically set to = 1.
- Refer to: p8805

**Note:**
- For p8805 = 0 (factory setting) the following applies:
  - Parameter p8809 contains the information described below.
  - Re p8809[0...3]:
    - Contains the value from r9781[0] "SI change tracking checksum functional".
  - Re p8809[4...7]:
    - Contains the value from r9782[0] "SI change tracking time stamp checksum functional".
  - Re p8809[8...53]:
    - Reserved.

---

**p8811**

<table>
<thead>
<tr>
<th>SINAMICS Link project selection / SINAMICS Link proj</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td>Can be changed: C1(1)</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: Communications</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>16</td>
</tr>
</tbody>
</table>

**Description:**
- Project selection for SINAMICS Link.

**Value:**
- 16: SINAMICS Link project 16 participants
- 64: SINAMICS Link project 64 participants

**Note:**
- 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.

---

**p8812[0...1]**

<table>
<thead>
<tr>
<th>SINAMICS Link settings / SINAMICS Link cl c</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td>Can be changed: C1(1)</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td>P-Group: Communications</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 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

**Index:**
- [0] = Activate isochronous mode
- [1] = Bus CC [µs]

**Dependency:**
- Refer to: p8811

**Note:**
- SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).
- A change only becomes effective after a POWER ON.
- The parameter is not influenced by setting the factory setting.
- Re index 0:
  - Is applicable for the synchronization of the application. The SINAMICS Link itself is always synchronous.
- Re index 1:
  - The value must be set the same for all participants.
  - 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

### p8829 CBE2x remote controller number / CBE2x rem ctrl num

<table>
<thead>
<tr>
<th>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</th>
<th>Can be changed: C1(1)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the number of remote controllers expected for PROFINET CBE20/CBE25.
The "Shared Device" functionality is activated with a value = 2.
The drive is being accessed by two PROFINET controllers simultaneously:
- automation controller (SIMOTION or SIMATIC A-CPU).
- safety controller (SIMATIC F-CPU).

**Value:**
1: Automation or Safety
2: Automation and Safety

**Notice:**
The F CPU may only use PROFIsafe telegrams.
The A CPU must be connected to enable the F CPU to gain access.
Set the value = 1 to commission the F CPU individually.

**Note:**
A change only becomes effective after a POWER ON.

### p8835 CBE20 firmware selection / CBE20 FW sel

<table>
<thead>
<tr>
<th>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</th>
<th>Can be changed: C1(1)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2198</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>99</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Selects the firmware version for the CBE20.

**Value:**
1: PROFINET Device
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.

### p8836 SINAMICS Link address / SINAMICS Link add

<table>
<thead>
<tr>
<th>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</th>
<th>Can be changed: C1(1)</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2198</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>64</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Selects the node address for the SINAMICS Link on the Communication Board Ethernet 20 (CBE20).
p8836 = 0: SINAMICS Link de-activated
p8836 = 1 ... 64: SINAMICS Link node address

**Dependency:**
Refer to: p8835

**Note:**
SINAMICS Link requires that the appropriate CBE20 firmware version is selected (p8835 = 3).
A change only becomes effective after a POWER ON.
The parameter is not influenced by setting the factory setting.
## 2 Parameters

### 2.2 List of parameters

#### p8837

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>0: Freeze setpoints and continue to process sign-of-life</td>
<td>Do not change the setting p2037 = 0.</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>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td></td>
<td>1: Freeze setpoints and sign-of-life</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: Do not freeze setpoints</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p8839[0...1]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>0: Inactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td></td>
<td>1: Control Unit onboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2: COMM BOARD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>99: Automatic</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p8840

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMM BOARD monitoring time / CB t_monit</td>
<td>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.</td>
<td>0 [ms]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</td>
<td></td>
<td>65535000 [ms]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 [ms]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2.2 List of Parameters

**p8841[0...239]**  
**COMM BOARD send configuration data / CB s config_dat**

- **CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)**
- **Can be changed:** U, T  
- **Data type:** Unsigned16  
- **P-Group:** Communications  
- **Not for motor type:** -
- **Min:** 0  
- **Max:** 65535

**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.

**p8842**  
**Activate COMM BOARD send configuration / CB s config act**

- **CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)**
- **Can be changed:** U, T  
- **Data type:** Unsigned16  
- **P-Group:** Communications  
- **Not for motor type:** -
- **Min:** 0  
- **Max:** 1

**Description:**
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.

**Dependency:**
Refer to: p8841

**Note:**
For CBE20, certain SINAMICS parameters are newly evaluated and activated. An existing, cyclic bus connection is interrupted.

**r8843.0...2**  
**BO: IF2 PZD state / IF2 PZD state**

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -  
- **Data type:** Unsigned8  
- **P-Group:** Communications  
- **Not for motor type:** -
- **Min:** -  
- **Max:** -

**Description:**
Displays the PROFIdrive PZD state.

**Bit field:**
- **Bit:** 00 Setpoint failure  
- **Signal name:** Yes  
- **Signal name:** No  
- **FP:** -
- **Bit:** 02 Fieldbus oper  
- **Signal name:** Yes  
- **Signal name:** No  
- **FP:** -

**Dependency:**
Refer to: p2044

**Note:**
When using the "setpoint failure" signal, the bus can be monitored and an application-specific response triggered when the setpoint fails.

**p8844**  
**IF2 fault delay / IF2 F delay**

- **DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S**
- **Can be changed:** U, T  
- **Data type:** FloatingPoint32  
- **P-Group:** Communications  
- **Not for motor type:** -
- **Min:** 0 [s]  
- **Max:** 100 [s]

**Description:**
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 it is possible to respond to the failure while the drive is still operational (e.g. emergency retraction).

**Dependency:**
Refer to: r2043
2 Parameters

2.2 List of parameters

### p8848

**IF2 PZD sampling time / IF2 PZD t_sample**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>1.00 [ms]</td>
<td>-</td>
</tr>
<tr>
<td>Max</td>
<td>16.00 [ms]</td>
<td>-</td>
</tr>
<tr>
<td>Factory setting</td>
<td>4.00 [ms]</td>
<td>-</td>
</tr>
</tbody>
</table>

**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).

### r8849[0...139]

**COMM BOARD receive configuration data / CB r config_dat**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<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 receive configuration data for the COMM BOARD.

### r8850[0...63]

**CO: IF2 PZD receive word / IF2 PZD recv word**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
<td>Integer16</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:**
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
2 Parameters
2.2 List of parameters

[27] = PZD 28
[28] = PZD 29
[29] = PZD 30
[30] = PZD 31
[31] = PZD 32
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36
[36] = PZD 37
[37] = PZD 38
[38] = PZD 39
[39] = PZD 40
[40] = PZD 41
[41] = PZD 42
[42] = PZD 43
[43] = PZD 44
[44] = PZD 45
[45] = PZD 46
[46] = PZD 47
[47] = PZD 48
[48] = PZD 49
[49] = PZD 50
[50] = PZD 51
[51] = PZD 52
[52] = PZD 53
[53] = PZD 54
[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

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
TM150, TM15DI_DO, TM31
Can be changed: - Calculated: - Access level: 3
Data type: Integer16 Dyn. index: - Func. diagram: 2491
P-Group: Communications Unit group: - Unit selection: -
Not for motor type: - Scaling: 4000H Expert list: 1
Min Max Factory setting
- - -

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

Note:
IF2: Interface 2
PZD1 to PZD2 are displayed bit-serially in r8890 to r8891.
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>PZD 1</td>
</tr>
<tr>
<td>1</td>
<td>PZD 2</td>
</tr>
<tr>
<td>2</td>
<td>PZD 3</td>
</tr>
<tr>
<td>3</td>
<td>PZD 4</td>
</tr>
<tr>
<td>4</td>
<td>PZD 5</td>
</tr>
<tr>
<td>5</td>
<td>PZD 6</td>
</tr>
<tr>
<td>6</td>
<td>PZD 7</td>
</tr>
<tr>
<td>7</td>
<td>PZD 8</td>
</tr>
<tr>
<td>8</td>
<td>PZD 9</td>
</tr>
<tr>
<td>9</td>
<td>PZD 10</td>
</tr>
<tr>
<td>10</td>
<td>PZD 11</td>
</tr>
<tr>
<td>11</td>
<td>PZD 12</td>
</tr>
<tr>
<td>12</td>
<td>PZD 13</td>
</tr>
<tr>
<td>13</td>
<td>PZD 14</td>
</tr>
<tr>
<td>14</td>
<td>PZD 15</td>
</tr>
<tr>
<td>15</td>
<td>PZD 16</td>
</tr>
<tr>
<td>16</td>
<td>PZD 17</td>
</tr>
<tr>
<td>17</td>
<td>PZD 18</td>
</tr>
<tr>
<td>18</td>
<td>PZD 19</td>
</tr>
<tr>
<td>19</td>
<td>PZD 20</td>
</tr>
<tr>
<td>20</td>
<td>PZD 21</td>
</tr>
<tr>
<td>21</td>
<td>PZD 22</td>
</tr>
<tr>
<td>22</td>
<td>PZD 23</td>
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<tr>
<td>23</td>
<td>PZD 24</td>
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<tr>
<td>24</td>
<td>PZD 25</td>
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<tr>
<td>25</td>
<td>PZD 26</td>
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<tr>
<td>26</td>
<td>PZD 27</td>
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<tr>
<td>27</td>
<td>PZD 28</td>
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<tr>
<td>28</td>
<td>PZD 29</td>
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<tr>
<td>29</td>
<td>PZD 30</td>
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<tr>
<td>30</td>
<td>PZD 31</td>
</tr>
<tr>
<td>31</td>
<td>PZD 32</td>
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<tr>
<td>32</td>
<td>PZD 33</td>
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<tr>
<td>33</td>
<td>PZD 34</td>
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<td>34</td>
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<td>36</td>
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<td>37</td>
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<td>38</td>
<td>PZD 39</td>
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<td>39</td>
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<td>40</td>
<td>PZD 41</td>
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<td>41</td>
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<td>PZD 43</td>
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<tr>
<td>43</td>
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<td>44</td>
<td>PZD 45</td>
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<tr>
<td>45</td>
<td>PZD 46</td>
</tr>
<tr>
<td>46</td>
<td>PZD 47</td>
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<tr>
<td>47</td>
<td>PZD 48</td>
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<td>48</td>
<td>PZD 49</td>
</tr>
<tr>
<td>49</td>
<td>PZD 50</td>
</tr>
<tr>
<td>50</td>
<td>PZD 51</td>
</tr>
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<td>51</td>
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<td>52</td>
<td>PZD 53</td>
</tr>
<tr>
<td>53</td>
<td>PZD 54</td>
</tr>
<tr>
<td>54</td>
<td>PZD 55</td>
</tr>
<tr>
<td>55</td>
<td>PZD 56</td>
</tr>
</tbody>
</table>

**Description:** Selects the PZD (actual values) to be sent via interface 2 in the word format.
2 Parameters

2.2 List of parameters

[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

Dependency: Refer to: p8861
Note: IF2: Interface 2

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8851[0...4]</td>
<td>CI: IF2 PZD send word / IF2 PZD send word</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32 / Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: 4000H</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: 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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r8853[0...63]</td>
<td>IF2 diagnostics PZD send / IF2 diag PZD send</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Communications</td>
<td>Unit 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>-</td>
<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
- [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
### 2 Parameters

#### 2.2 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>Bit 0</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
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**Dependency:**
Refer to: p8851, p8861

**Note:** IF2: Interface 2
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r8853[0...4]</strong></td>
<td><strong>IF2 diagnostics PZD send / IF2 diag PZD send</strong></td>
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<tr>
<td>TM150, TM15DI_DO, TM31</td>
<td>Displays the sent PZD (actual values) sent via interface 2.</td>
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<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2493</td>
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<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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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td>[0]</td>
<td>= PZD 1</td>
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<tr>
<td>[1]</td>
<td>= PZD 2</td>
<td></td>
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<tr>
<td>[2]</td>
<td>= PZD 3</td>
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<tr>
<td>[3]</td>
<td>= PZD 4</td>
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**Description:** IF2: Interface 2

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<th>Bit</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
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<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
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<td></td>
</tr>
</tbody>
</table>

**Note:**

| r8854 | **COMM BOARD state / CB state** | | |
| CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20) | Status display for COMM BOARD. | | |
| Can changed: - | Calculated: - | Access level: 3 |
| Data type: Integer16 | Dyn. index: - | Func. diagram: - |
| P-Group: Communications | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: - | Expert list: 1 |
| Min | Max | Factory setting |
| 0 | 255 | - |

**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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</td>
<td>Displays the COMM BOARD diagnostics data.</td>
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<td></td>
</tr>
<tr>
<td>Can changed: -</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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>
</tbody>
</table>

**Description:**
Note: 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.

**r8859[0...7]**

<table>
<thead>
<tr>
<th>COMM BOARD identification data / CB ident data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
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<tr>
<td>Data type: Unsigned16</td>
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<tr>
<td>P-Group: Communications</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
</tbody>
</table>

**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

**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)

**r8860[0...62]**

<table>
<thead>
<tr>
<th>CO: IF2 PZD receive double word / IF2 PZD recv DW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Integer32</td>
</tr>
<tr>
<td>P-Group: Communications</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
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</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
- [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
2 Parameters

2.2 List of parameters

[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
[31] = PZD 32 + 33
[32] = PZD 33 + 34
[33] = PZD 34 + 35
[34] = PZD 35 + 36
[35] = PZD 36 + 37
[36] = PZD 37 + 38
[37] = PZD 38 + 39
[38] = PZD 39 + 40
[39] = PZD 40 + 41
[40] = PZD 41 + 42
[41] = PZD 42 + 43
[42] = PZD 43 + 44
[43] = PZD 44 + 45
[44] = PZD 45 + 46
[45] = PZD 46 + 47
[46] = PZD 47 + 48
[47] = PZD 48 + 49
[48] = PZD 49 + 50
[49] = PZD 50 + 51
[50] = PZD 51 + 52
[51] = PZD 52 + 53
[52] = PZD 53 + 54
[53] = PZD 54 + 55
[54] = PZD 55 + 56
[55] = PZD 56 + 57
[56] = PZD 57 + 58
[57] = PZD 58 + 59
[58] = PZD 59 + 60
[59] = PZD 60 + 61
[60] = PZD 61 + 62
[61] = PZD 62 + 63
[62] = PZD 63 + 64

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
2 Parameters

2.2 List of parameters

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<th>Description</th>
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<th>Data type</th>
<th>Access level</th>
<th>DC_CTRL,</th>
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<th>DC_CTRL_R_S,</th>
<th>DC_CTRL_S</th>
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<tbody>
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<td>CI: IF2 PZD send double word / IF2 PZD send DW</td>
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<td>P-Group: Communications</td>
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<td>Selected the PZD (actual values) to be sent via interface 2 in the double word format.</td>
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<td>[0] = PZD 1 + 2</td>
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<td>[3] = PZD 4 + 5</td>
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<td>[5] = PZD 6 + 7</td>
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<td>[6] = PZD 7 + 8</td>
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<td>[7] = PZD 8 + 9</td>
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<td>[8] = PZD 9 + 10</td>
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<td>[9] = PZD 10 + 11</td>
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<td>[10] = PZD 11 + 12</td>
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<td>[12] = PZD 13 + 14</td>
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<td>[13] = PZD 14 + 15</td>
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<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>[18] = PZD 19 + 20</td>
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2 Parameters

2.2 List of parameters

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2 Parameters
2.2 List of parameters

[41] = PZD 42 + 43
[42] = PZD 43 + 44
[43] = PZD 44 + 45
[44] = PZD 45 + 46
[45] = PZD 46 + 47
[46] = PZD 47 + 48
[47] = PZD 48 + 49
[48] = PZD 49 + 50
[49] = PZD 50 + 51
[50] = PZD 51 + 52
[51] = PZD 52 + 53
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[53] = PZD 54 + 55
[54] = PZD 55 + 56
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Notice: A maximum of 4 indices of the "trace" function can be used.

Note: IF2: Interface 2
2 Parameters

2.2 List of parameters

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<th>Parameter Name</th>
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<td>IF2 PZD maximum interconnected / IF2 PZDmaxIntercon</td>
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<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
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<td>Index 0: receive (r8850, r8860)</td>
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<td>Index 1: send (p8851, p8861)</td>
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<td><strong>Description:</strong></td>
<td>Display for the maximum interconnected PZD in the receive/send direction</td>
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<td>[3] = PZD 4</td>
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<td>[6] = PZD 7</td>
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<td>Value range:</td>
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<td>1 ... 16: Telegram word</td>
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<td>A pair of values p8870[index], p8872[index] may only be used once in single a device.</td>
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<td>A change only becomes effective after POWER ON, reset, project download or p8842 = 1.</td>
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<td>Assignment of a PZD to a telegram word from a SINAMICS Link receive telegram.</td>
</tr>
<tr>
<td><strong>Index:</strong></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><strong>Dependency:</strong></td>
<td>Refer to: p8872</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Value range:</td>
</tr>
<tr>
<td></td>
<td>0: Not used</td>
</tr>
<tr>
<td></td>
<td>1 ... 16: Telegram word</td>
</tr>
<tr>
<td></td>
<td>A pair of values p8870[index], p8872[index] may only be used once in single a device.</td>
</tr>
<tr>
<td></td>
<td>A change only becomes effective after POWER ON, reset, project download or p8842 = 1.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**p8871[0...15]**

**SINAMICS Link send telegram word PZD / Send link word**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Data type:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8871[0]</td>
<td>Assigns a PZD to a telegram word in the SINAMICS Link send telegram. For p8839[0] = 2 (COMM BOARD via interface 1), the following applies: - p8871[index] assigns PZD p2051[index].</td>
<td>T</td>
<td>Unsigned16</td>
<td>3</td>
</tr>
<tr>
<td>p8871[1]</td>
<td>For p8839[1] = 2 (COMM BOARD via interface 2), the following applies: - p8871[index] assigns PZD p8851[index].</td>
<td>-</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
- [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.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p8872[0...15]</td>
<td>SINAMICS Link address receive PZD / Link addr recv</td>
<td>Can be changed: T</td>
<td>Value range: 0: Not used 1 ... 64: Address</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>Dyn. index: -</td>
<td>A change only becomes effective after POWER ON, reset, project download or p8842 = 1.</td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>64</td>
<td>0</td>
</tr>
<tr>
<td>r8874[0...63]</td>
<td>IF2 diagnostics bus address PZD receive / IF2 diag addr recv</td>
<td>Can be changed: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Selects the address of the SINAMICS Link 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

**Dependency:**
Refer to: p8870

**Note:**
Value range:
- 0: Not used
- 1 ... 64: Address
A change only becomes effective after POWER ON, reset, project download or p8842 = 1.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Access level: 3</td>
<td>Func. diagram: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: Communications</td>
<td>Unit group: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</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
2 Parameters

2.2 List of parameters

[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
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36
[36] = PZD 37
[37] = PZD 38
[38] = PZD 39
[39] = PZD 40
[40] = PZD 41
[41] = PZD 42
[42] = PZD 43
[43] = PZD 44
[44] = PZD 45
[45] = PZD 46
[46] = PZD 47
[47] = PZD 48
[48] = PZD 49
[49] = PZD 50
[50] = PZD 51
[51] = PZD 52
[52] = PZD 53
[53] = PZD 54
[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

Note:
IF2: Interface 2
Value range:
0 - 125: Bus address of the sender
255: Not assigned
### 2.2 List of parameters

**r8874[0...4]** 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>
</table>

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

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Min**

**Max**

**Factory setting**

**r8875[0...63]** 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>
</table>

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

**Data type:** Unsigned16

**P-Group:** Communications

**Not for motor type:** -

**Min**

**Max**

**Factory setting**
### 2 Parameters

#### 2.2 List of parameters

**[38]** = PZD 39
**[39]** = PZD 40
**[40]** = PZD 41
**[41]** = PZD 42
**[42]** = PZD 43
**[43]** = PZD 44
**[44]** = PZD 45
**[45]** = PZD 46
**[46]** = PZD 47
**[47]** = PZD 48
**[48]** = PZD 49
**[49]** = PZD 50
**[50]** = PZD 51
**[51]** = PZD 52
**[52]** = PZD 53
**[53]** = PZD 54
**[54]** = PZD 55
**[55]** = PZD 56
**[56]** = PZD 57
**[57]** = PZD 58
**[58]** = PZD 59
**[59]** = PZD 60
**[60]** = PZD 61
**[61]** = PZD 62
**[62]** = PZD 63
**[63]** = PZD 64

**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>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the byte offset of the PZD in the receive telegram.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**Dyn. index:** -

**Unit group:** Communications

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** -

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5

---

**r8876[0...63]**

**IF2 diagnostics telegram offset PZD send / IF2 diag offs send**

<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 byte offset of the PZD in the send telegram.</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16

**Dyn. index:** -

**Unit group:** Communications

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** -

**Index:**
- [0] = PZD 1
- [1] = PZD 2
- [2] = PZD 3
- [3] = PZD 4
- [4] = PZD 5
- [5] = PZD 6
- [6] = PZD 7
2 Parameters

2.2 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
[32] = PZD 33
[33] = PZD 34
[34] = PZD 35
[35] = PZD 36
[36] = PZD 37
[37] = PZD 38
[38] = PZD 39
[39] = PZD 40
[40] = PZD 41
[41] = PZD 42
[42] = PZD 43
[43] = PZD 44
[44] = PZD 45
[45] = PZD 46
[46] = PZD 47
[47] = PZD 48
[48] = PZD 49
[49] = PZD 50
[50] = PZD 51
[51] = PZD 52
[52] = PZD 53
[53] = PZD 54
[54] = PZD 55
[55] = PZD 56
[56] = PZD 57
[57] = PZD 58
[58] = PZD 59
[59] = PZD 60
[60] = PZD 61
[61] = PZD 62
[62] = PZD 63
[63] = PZD 64

Note:
IF2: Interface 2
Value range:
0 - 242: Byte offset
255: Not assigned
## 2.2 List of parameters

### r8876[0...4]
- **IF2 diagnostics telegram offset PZD send / IF2 diag offs send**
- **Address**: TM150, TM15DI_DO, TM31
- **Description**: Displays the byte offset of the PZD in the send telegram.

<table>
<thead>
<tr>
<th>Field</th>
<th>Type</th>
<th>Access level</th>
<th>Func. diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>-</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>Communications</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></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### p8880[0...15]
- **BI: IF2 binector-connector converter status word 1 / Bin/con ZSW1**
- **Address**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Description**: Selects bits to be sent via interface 2. The individual bits are combined to form status word 1.

### p8881[0...15]
- **BI: IF2 binector-connector converter status word 2 / Bin/con ZSW2**
- **Address**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Description**: Selects bits to be sent via interface 2. The individual bits are combined to form status word 2.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p8882[0...15] BI: IF2 binector-connector converter status word 3 / Bin/con ZSW3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong>, <strong>DC_CTRL_R</strong>, <strong>DC_CTRL_R_S</strong>, <strong>DC_CTRL_S</strong></td>
</tr>
<tr>
<td><strong>Data type</strong>: Unsigned32 / Binary</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>[7] = Bit 7</td>
</tr>
<tr>
<td>[8] = Bit 8</td>
</tr>
<tr>
<td>[9] = Bit 9</td>
</tr>
<tr>
<td>[10] = Bit 10</td>
</tr>
<tr>
<td>[12] = Bit 12</td>
</tr>
<tr>
<td>[13] = Bit 13</td>
</tr>
<tr>
<td>[14] = Bit 14</td>
</tr>
<tr>
<td>[15] = Bit 15</td>
</tr>
<tr>
<td><strong>Dependency</strong>: Refer to: p8888, r8889</td>
</tr>
<tr>
<td><strong>Description</strong>: Selects bits to be sent via interface 2. The individual bits are combined to form free status word 3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p8883[0...15] BI: IF2 binector-connector converter status word 4 / Bin/con ZSW4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong>, <strong>DC_CTRL_R</strong>, <strong>DC_CTRL_R_S</strong>, <strong>DC_CTRL_S</strong></td>
</tr>
<tr>
<td><strong>Data type</strong>: Unsigned32 / Binary</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>[7] = Bit 7</td>
</tr>
<tr>
<td>[8] = Bit 8</td>
</tr>
<tr>
<td>[9] = Bit 9</td>
</tr>
<tr>
<td>[10] = Bit 10</td>
</tr>
<tr>
<td>[12] = Bit 12</td>
</tr>
<tr>
<td>[13] = Bit 13</td>
</tr>
<tr>
<td>[14] = Bit 14</td>
</tr>
<tr>
<td>[15] = Bit 15</td>
</tr>
<tr>
<td><strong>Dependency</strong>: Refer to: p8888, r8889</td>
</tr>
<tr>
<td><strong>Description</strong>: Selects bits to be sent via interface 2. The individual bits are combined to form free status word 4.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

[13] = Bit 13
[14] = Bit 14
[15] = Bit 15

Dependency:
Refer to: p8888, r8889

### p8884[0...15]
**BI: IF2 binector-connector converter status word 5 / Bin/con ZSW5**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>DC_CTRL_R</th>
<th>DC_CTRL_R_S</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2489</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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

Dependency:
Refer to: p8888, r8889

**Description:**
Selects bits to be sent via interface 2.
The individual bits are combined to form free status word 5.

**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

### p8888[0...4]
**IF2 invert binector-connector converter status word / Bin/con ZSW inv**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>DC_CTRL_R</th>
<th>DC_CTRL_R_S</th>
<th>DC_CTRL_S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2489</td>
<td></td>
</tr>
<tr>
<td>P-Group: Communications</td>
<td>Unit 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

Dependency:
Refer to: p8888, r8889

**Description:**
Setting to invert the individual binector inputs of the binector connector converter.

**Index:**
- [0] = Status word 1
- [1] = Status word 2
- [2] = Free status word 3
- [3] = Free status word 4
- [4] = Free status word 5

**Bit field:**

<table>
<thead>
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## 2.2 List of parameters

### r8889[0...4]

**CO: IF2 send binector-connector converter status word / Bin/con ZSW send**

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</table>

**Dependency:** Refer to: p8880, p8888, p8881, p8882, p8883, p8884, r8889

**Description:** Connector output to interconnect the status words to a PZD send word.

**Index:**

- [0] = Status word 1
- [1] = Status word 2
- [2] = Free status word 3
- [3] = Free status word 4
- [4] = Free status word 5

### r8890.0...15

**BO: IF2 PZD1 receive bit-serial / IF2 PZD1 recv bitw**

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<tbody>
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</table>

**Dependency:** Refer to: p8851, p8880, p8881, p8882, p8883, p8884, p8888

**Note:** r8889 together with p8880 to p8884 forms five binector-connector converters.
## 2 Parameters

### 2.2 List of parameters

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#### r8891.0...15 BO: IF2 PZD2 receive bit-serial / IF2 PZD2 recv bitw

- **Dependency**: Refer to: r8850
- **Note**: IF2: Interface 2

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#### r8892.0...15 BO: IF2 PZD3 receive bit-serial / IF2 PZD3 recv bitw

- **Dependency**: Refer to: r8850
- **Note**: IF2: Interface 2

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## 2 Parameters

### 2.2 List of parameters

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**Dependency:** Refer to: r8850

**Note:** IF2: Interface 2

### r8893.0...15

**BO: IF2 PZD4 receive bit-serial / IF2 PZD4 recv bitw**

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**Dependency:** Refer to: r8850

**Note:** IF2: Interface 2

### r8894.0...15

**BO: IF2 connector-binector converter binector output / Con/bin outp**

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<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>
</tbody>
</table>
2 Parameters
2.2 List of parameters

r8895.0...15

**BO: IF2 connector-binector converter binector output / Con/bin outp**

<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>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
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</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
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<td>11</td>
<td>Bit 11</td>
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<td>OFF</td>
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<td></td>
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<tr>
<td>12</td>
<td>Bit 12</td>
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<td>-</td>
<td></td>
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<tr>
<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>
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</tr>
<tr>
<td>15</td>
<td>Bit 15</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</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[1].

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>

**Dependency:** Refer to: p8898, p8899

**Description:** Setting to invert the individual binector outputs of the connector-binector converter.

Using p8898[0], the signals of CI: p8899[0] are influenced.

Using p8898[1], the signals of CI: p8899[1] are influenced.
2 Parameters

2.2 List of parameters

Dependency: Refer to: r8894, r8895, p8899

**p8899[0...1]**

<table>
<thead>
<tr>
<th>CI: IF2 connector-binector converter signal source / Con/bin S_src</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong>, <strong>DC_CTRL_R</strong>, <strong>DC_CTRL_R_S</strong>, <strong>DC_CTRL_S</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32 / Integer16</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>-</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: r8850, r8894, r8895, p8898

**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

**r8909**

<table>
<thead>
<tr>
<th><strong>PN device ID / PN device ID</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16</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>-</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
- 050A hex: DC MASTER
- 050C hex: MV
- 050F hex: G120P
- 0510 hex: G120C
- 0511 hex: G120 CU240E-2
- 0512 hex: G120D
- 0513 hex: G120 CU250S-2 Vector
- 0514 hex: G110M

**p8940[0...239]**

<table>
<thead>
<tr>
<th><strong>CBE2x Name of Station / CBE2x Name Stat</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</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>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the station name for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**Dependency:**
Refer to: p8941, p8942, p8943, p8944, p8945

**Note:**
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
The interface configuration (p8940 and following) is activated with p8945.
The parameter is not influenced by setting the factory setting.
### 2 Parameters

#### 2.2 List of parameters

**p8941[0...3]**  
**CBE2x IP Address of Station / CBE2x IP of Stat**  
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the IP address for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**Dependency:** Refer to: p8940, p8942, p8943, p8944, p8945

**Note:** The interface configuration (p8940 and following) is activated with p8945. The parameter is not influenced by setting the factory setting.

**p8942[0...3]**  
**CBE2x Default Gateway of Station / CBE2x Def Gateway**  
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the standard gateway for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**Dependency:** Refer to: p8940, p8941, p8943, p8944, p8945

**Note:** The interface configuration (p8940 and following) is activated with p8945. The parameter is not influenced by setting the factory setting.

**p8943[0...3]**  
**CBE2x Subnet Mask of Station / CBE2x Subnet Mask**  
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the subnet mask for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**Dependency:** Refer to: p8940, p8941, p8942, p8944, p8945

**Note:** The interface configuration (p8940 and following) is activated with p8945. The parameter is not influenced by setting the factory setting.

**p8944**  
**CBE2x DHCP Mode / CBE2x DHCP Mode**  
<table>
<thead>
<tr>
<th>Field</th>
<th>Details</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned8</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>255</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the DHCP mode for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**Dependency:** Refer to: p8940, p8941, p8942, p8943, p8945

**Notice:** When the DHCP mode is active (p8944 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

**Note:** The active DHCP mode is displayed in parameter r8954. The interface configuration (p8940 and following) is activated with p8945. The parameter is not influenced by setting the factory setting.
2 Parameters

2.2 List of parameters

If value = 0:
DHCP deactivated.
If value = 1:
Reserved.
If value = 2:
DHCP activated. The MAC address of this interface is used for client identification.
If value = 3:
DHCP activated. The station name of this interface is used for client identification.

### p8945

<table>
<thead>
<tr>
<th>CBE2x interface configuration / CBE2x int config</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16</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>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the activation of the interface configuration for the Communication Board Ethernet 20/25 (CBE20/CBE25). p8945 is automatically set to 0 at the end of an operation.

**Value:**
0: No function
2: Save and activate configuration
3: Delete configuration

**Dependency:**
Refer to: p8940, p8941, p8942, p8943, p8944

**Notice:**
When the DHCP mode is active (p8944 > 0), then PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

**Note:**
For CBE20, the parameter is only valid for firmware version "PROFINET Device" (p8835 = 1) or "Ethernet/IP" (p8835 = 4). Otherwise, it is locked.
This restriction is not applicable for the CBE25.
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.

### r8950[0...239]

<table>
<thead>
<tr>
<th>CBE2x Name of Station active / CBE2x Name act</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</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>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active station name for the Communication Board Ethernet 20/25 (CBE20/CBE25).

### r8951[0...3]

<table>
<thead>
<tr>
<th>CBE2x IP Address of Station active / CBE2x IP act</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)</strong></td>
</tr>
<tr>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned8</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>0</td>
</tr>
</tbody>
</table>

**Description:**
Displays the active IP address for the Communication Board Ethernet 20/25 (CBE20/CBE25).
2 Parameters

2.2 List of parameters

**r8952[0...3]**  
**CBE2x Default Gateway of Station active / CBE2x def GW act**  
**Description:** Displays the active standard gateway for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**r8953[0...3]**  
**CBE2x Subnet Mask of Station active / CBE2x Sub Mask act**  
**Description:** Displays the active subnet mask for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**r8954**  
**CBE2x DHCP Mode active / CBE2x DHCP act**  
**Description:** Displays the active DHCP mode for the Communication Board Ethernet 20/25 (CBE20/CBE25).  
**Notice:** When the DHCP mode is active (parameter value greater than 0), PROFINET communication via this interface is no longer possible! However, the interface can be used by the STARTER/SCOUT commissioning tool.

**r8955[0...5]**  
**CBE2x MAC Address of Station / CBE2x MAC Addr**  
**Description:** Displays the MAC address for the Communication Board Ethernet 20/25 (CBE20/CBE25).

**r8959**  
**CBE2x DAP ID / CBE2x DAP ID**  
**Description:** Displays the DAP ID for PROFINET via the Communication Board Ethernet 20/25 (CBE20/CBE25).
The combination of device ID (r8909) and DAP ID (r8959) uniquely identifies a PROFINET access point.

Note: DAP ID: Device Access Point ID
DAP ID = 20007 hex: SINAMICS CBE20 V4.5
DAP ID = 20008 hex: SINAMICS CBE20 V4.6
DAP ID = 20009 hex: SINAMICS CBE20 V4.7
DAP ID = 20209 hex: SINAMICS CBE25 V4.7

The combination of device ID (r8909) and DAP ID (r8959) uniquely identifies a PROFINET access point.

Note: DAP ID: Device Access Point ID
DAP ID = 20007 hex: SINAMICS CBE20 V4.5
DAP ID = 20008 hex: SINAMICS CBE20 V4.6
DAP ID = 20009 hex: SINAMICS CBE20 V4.7
DAP ID = 20209 hex: SINAMICS CBE25 V4.7

r8960[0...2] PN subslot controller assignment / PN subslot assign
All objects Can be changed: - Calculated: - Access level: 3
Data type: Unsigned8 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0 8 -

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

Note: Example:
If the parameter contains the value 2 in index [1], then this means that subslot 3 is assigned to controller 2.

r8970[0...2] CBE2x subslot controller assignment / CBE2x subslot
CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20),
CU_DC_R_S (PROFINET CBE20),
CU_DC_S (PROFINET CBE20),
DC_CTRL (PROFINET CBE20),
DC_CTRL_R (PROFINET CBE20),
DC_CTRL_R_S (PROFINET CBE20),
DC_CTRL_S (PROFINET CBE20),
TM150 (PROFINET CBE20),
TM15DI_DO (PROFINET CBE20),
TM31 (PROFINET CBE20)
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned8 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0 8 -

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] CBE2x IP Address Remote Controller 1 / CBE2x IP Rem Ctrl1
CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20),
CU_DC_R_S (PROFINET CBE20),
CU_DC_S (PROFINET CBE20)
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned8 Dyn. index: - Func. diagram: -
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
0 255 -

Description: Displays the IP address of the first PROFINET controller connected with the device via CBE20/CBE25.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r8972[0...3]</strong></td>
<td>Displays the IP address of the second PROFINET controller connected with the device via CBE20/CBE25.</td>
</tr>
<tr>
<td><strong>p9206[0...2]</strong></td>
<td>Data setting to read topology properties. The result is displayed depending on the property in r9207 or r9208.</td>
</tr>
</tbody>
</table>

#### Example 1: r8972[0...3]

**CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)**

- **Can be changed:**
- **Data type:** Unsigned8
- **P-Group:** -
- **Not for motor type:** -

**Index:**
- 

**Dependency:**
- Refer to: r9207, r9208

#### Example 2: p9206[0...2]

**CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**

- **Can be changed:** T
- **Data type:** Unsigned32
- **P-Group:** Topology
- **Not for motor type:** -

**Index:**
- [0] = Actual topology/target topology
- [1] = Component number
- [2] = Identifier/property

**Dependency:**
- Refer to: r9207, r9208
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9207</td>
<td>Topology direct access integer value / Topo access int</td>
<td>Displays the value for the property set in p9206. A value is only displayed for integer type properties.</td>
</tr>
<tr>
<td>r9208[0...50]</td>
<td>Topology direct access string / Topo access string</td>
<td>Displays the value for the property set in p9206. A value is only displayed for string type properties.</td>
</tr>
<tr>
<td>p9210</td>
<td>Flashing component number / Flash comp_no</td>
<td>Sets the component number for a component to get its status LED to flash.</td>
</tr>
<tr>
<td>p9211</td>
<td>Flash function / Flash fct.</td>
<td>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 &quot;flashing on&quot; function (set p9211 = 1).</td>
</tr>
</tbody>
</table>

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.
2 Parameters

2.2 List of parameters

r9220 Statistic number of entries / Statistic size

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9220</td>
<td>Supplies the number of entries in p9222.</td>
<td>In p9221, the component Id is set whose statistic entries are to be displayed.</td>
<td>As a statistic entry comprises 5 data, when calling the entries via the terminal, a size that represents a multiple of 5 must be specified.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: p9221</td>
<td>Example: the 2nd entry must be called:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rdp 1 9222 5 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>or</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>rdpa 1 9222 5 5.</td>
</tr>
</tbody>
</table>

p9221 Statistic components Id / Statistic compId

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p9221</td>
<td>Selects the component Id whose statistics are to be displayed in p9222.</td>
<td>In p9221, the component Id can be set whose statistic is to be displayed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: p9221</td>
<td></td>
</tr>
</tbody>
</table>

r9222[0...n] Statistic Drive-CLiQ acyclic communication / Statistic

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r9222</td>
<td>Represents the statistic of acyclic Drive-CLiQ communication.</td>
<td>The number of statistic entries is displayed in p9220.</td>
<td>As a statistic entry comprises 5 data, when calling the entries via the terminal, a size that represents a multiple of 5 must be specified.</td>
</tr>
<tr>
<td></td>
<td>The component is preset in p9221.</td>
<td>In p9221, the component Id can be set whose statistic is to be displayed.</td>
<td>Example: the 2nd entry must be called:</td>
</tr>
<tr>
<td></td>
<td>The entry comprises the following elements:</td>
<td>Refer to: r9220, p9221</td>
<td>rdp 1 9222 5 5</td>
</tr>
<tr>
<td></td>
<td>Index 0: Parameter Id</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index 1: Number of messages sent.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index 2: Minimum time of all acyclic requests referred to the parameter Id (index 0).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index 3: Maximum time of all acyclic requests referred to the parameter Id (index 0).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index 4: Average of all acyclic requests referred to the parameter Id (index 0).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The time unit is 10us.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>As a statistic entry comprises 5 data, when calling the entries via the terminal, a size that represents a multiple of 5 must be specified.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example: the 2nd entry must be called:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rdp 1 9222 5 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>or</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>rdpa 1 9222 5 5.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p9400</th>
<th>Safely remove memory card / Mem_card rem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong>&lt;br&gt;<strong>CU_DC_R_S,</strong>&lt;br&gt;<strong>CU_DC_S</strong></td>
<td><strong>Can be changed:</strong> T&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Access level:</strong> 2</td>
</tr>
<tr>
<td><strong>Data type:</strong> Integer16&lt;br&gt;<strong>Dyn. index:</strong> -&lt;br&gt;<strong>Func. diagram:</strong> -&lt;br&gt;<strong>Unit group:</strong> -&lt;br&gt;<strong>Unit selection:</strong> -&lt;br&gt;<strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong>&lt;br&gt;0</td>
<td><strong>Max</strong>&lt;br&gt;100&lt;br&gt;<strong>Factory setting</strong>&lt;br&gt;0</td>
</tr>
<tr>
<td><strong>Description:</strong> Setting and display when memory card is &quot;removed safely&quot;.</td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong> Setting p9400 = 2 results in a value of 3&lt;br&gt;--&gt; The memory card can be removed safely. After removal the value sets itself to 0 automatically.&lt;br&gt;Setting p9400 = 2 results in a value of 100&lt;br&gt;--&gt; The memory card cannot be removed safely. Removal may destroy the file system on the memory card. It may be necessary to set p9400 = 2 again.</td>
<td></td>
</tr>
<tr>
<td><strong>Value:</strong> 0: No memory card inserted&lt;br&gt;1: Memory card inserted&lt;br&gt;2: Request &quot;safe removal&quot; of the memory card&lt;br&gt;3: &quot;Safe removal&quot; possible&lt;br&gt;100: &quot;Safe removal&quot; not possible due to access</td>
<td></td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: r9401</td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong> Removing the memory card without a request (p9400 = 2) and confirmation (p9400 = 3) may destroy the file system on the memory card. The memory card will then no longer work properly and must be replaced.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> The status when the memory card is being &quot;removed safely&quot; is shown in r9401. Re value = 0, 1, 3, 100: These values can only be displayed, not set.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r9401</th>
<th>Safely remove memory card status / Mem_card rem stat</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CU_DC, CU_DC_R,</strong>&lt;br&gt;<strong>CU_DC_R_S,</strong>&lt;br&gt;<strong>CU_DC_S</strong></td>
<td><strong>Can be changed:</strong> -&lt;br&gt;<strong>Calculated:</strong> -&lt;br&gt;<strong>Access level:</strong> 2</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned16&lt;br&gt;<strong>Dyn. index:</strong> -&lt;br&gt;<strong>Func. diagram:</strong> -&lt;br&gt;<strong>Unit group:</strong> -&lt;br&gt;<strong>Unit selection:</strong> -&lt;br&gt;<strong>Expert list:</strong> 1</td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong>&lt;br&gt;-</td>
<td><strong>Max</strong>&lt;br&gt;-&lt;br&gt;<strong>Factory setting</strong>&lt;br&gt;-</td>
</tr>
<tr>
<td><strong>Description:</strong> Displays the status of the memory card.</td>
<td></td>
</tr>
<tr>
<td><strong>Bit field:</strong>&lt;br&gt;<strong>Bit</strong>&lt;br&gt;00&lt;br&gt;01&lt;br&gt;02&lt;br&gt;03</td>
<td><strong>Signal name</strong>&lt;br&gt;Memory card inserted&lt;br&gt;Memory card activated&lt;br&gt;SIEMENS memory card&lt;br&gt;Memory card as USB data storage medium from the PC used</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p9400</td>
<td></td>
</tr>
</tbody>
</table>
| **Note:** Re bit 01, 00:<br>Bit 1/0 = 0/0: No memory card inserted (corresponds to p9400 = 0).<br>Bit 1/0 = 0/1: "Safe removal" possible (corresponds to p9400 = 3).<br>Bit 1/0 = 1/0: Status not possible.<br>Bit 1/0 = 1/1: Memory card inserted (corresponds to p9400 = 1, 2, 100).<br>Re bit 02, 00:<br>Bit 2/0 = 0/0: No memory card inserted.<br>Bit 2/0 = 0/1: Memory card inserted, but not a SIEMENS memory card.<br>Bit 2/0 = 1/0: Status not possible.<br>Bit 2/0 = 1/1: SIEMENS memory card inserted.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>r9406[0...19]</th>
<th>PS file parameter number parameter not transferred / PS par_no n transf</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: -  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16  Dyn. index: -  Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -  Unit 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>-  -  -</td>
</tr>
</tbody>
</table>

**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).

- \( r9406[0] = 0 \)
  --> 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

<table>
<thead>
<tr>
<th>r9407[0...19]</th>
<th>PS file parameter index parameter not transferred / PS parameter index</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: -  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16  Dyn. index: -  Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -  Unit 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>-  -  -</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>r9408[0...19]</th>
<th>PS file fault code parameter not transferred / PS fault code</th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: -  Calculated: -  Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16  Dyn. index: -  Func. diagram: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -  Unit 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>-  -  -</td>
</tr>
</tbody>
</table>

**Description:**
Only for internal Siemens service purposes.

**Dependency:**
Refer to: r9406, r9407
### 2 Parameters

#### 2.2 List of parameters

**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

<table>
<thead>
<tr>
<th><strong>r9409</strong></th>
<th><strong>Number of parameters to be saved / Qty par to save</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type:</td>
<td>Uns signed16 Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit 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><strong>Description:</strong></td>
<td>Displays the number of modified parameters and those that have still not be saved for this drive object.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p0971, p0977</td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>Inherent to the system, the list of the parameters to be backed up is empty after the following actions:</td>
</tr>
<tr>
<td></td>
<td>- Download</td>
</tr>
<tr>
<td></td>
<td>- Warm restart</td>
</tr>
<tr>
<td></td>
<td>- Factory setting</td>
</tr>
<tr>
<td></td>
<td>In these cases, a new parameter backup must be initiated, which is then the starting point for the list of modified parameters.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The modified parameters that still need to be saved are internally listed in r9410 ... r9419.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>r9450[0...29]</strong></th>
<th><strong>Reference value change parameter with unsuccessful calculation / Ref_chg par n poss</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>Uns signed32 Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit 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><strong>Description:</strong></td>
<td>Displays the parameters for which the re-calculation was unsuccessful after an internal system reference value change.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>r9451[0...29]</strong></th>
<th><strong>Units changeover adapted parameters / Unit_chngov par</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>Uns signed32 Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit 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><strong>Description:</strong></td>
<td>Displays the parameters whose parameter would have to be changed during a units changeover.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>r9481</strong></th>
<th><strong>Number of BICO interconnections / BICO count</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>All objects</td>
<td>Can be changed: - Calculated: - Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Uns signed16 Dyn. index: - Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Commands Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: - Expert list: 0</td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Displays the number of BICO interconnections (signal sinks).</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: r9482, r9483</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The selected BICO interconnections should be entered into r9482 and r9483.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

### r9482[0...n]
**BICO interconnections Bi/CI parameters / BICO Bi/CI par**

<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>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** Commands  
**Not for motor type:** -  
**Min**  
**Max**  

**Description:**
Displays the signal sinks (binector/connector inputs, Bi/CI parameters).

**Dependency:**
Refer to: r9481, r9483

**Note:**
The number of BICO interconnections is displayed in r9481.

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)

### r9483[0...n]
**BICO interconnections BO/CO parameters / BICO BO/CO par**

<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>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32  
**P-Group:** Commands  
**Not for motor type:** -  
**Min**  
**Max**  

**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)

### p9484
**BICO interconnections search signal source / BICO S_src srch**

<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:** Unsigned32  
**P-Group:** -  
**Not for motor type:** -  
**Min**  
**Max**  

**Description:**
Sets the signal source (BO/CO parameter, BICO coded) to search in the signal sinks.

**Dependency:**
Refer to: r9481, r9482, r9483, r9485, r9486

### r9485
**BICO interconnections signal source search count / BICO S_src srchQty**

<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>3</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned16  
**P-Group:** -  
**Not for motor type:** -  
**Min**  
**Max**  

**Description:**
Displays the number of BICO interconnections to the signal sink being searched for.

**Dependency:**
Refer to: r9481, r9482, r9483, p9484, r9486
2 Parameters

2.2 List of parameters

**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).

### r9486

**BICO interconnections signal source search first index / BICO S_src srchIdx**

<table>
<thead>
<tr>
<th>Data type: Unsigned16</th>
<th>Dyn. index: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scaling: -</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**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 (r9485) and the first index (r9486).

### r9490

**Number of BICO interconnections to other drives / Qty BICO to drive**

<table>
<thead>
<tr>
<th>Data type: Unsigned16</th>
<th>Dyn. index: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Commands</td>
<td>Unit group: -</td>
<td></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 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]

**BI/CI of BICO interconnections to other drives / BI/CI to drive**

<table>
<thead>
<tr>
<th>Data type: Unsigned32</th>
<th>Dyn. index: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Commands</td>
<td>Unit group: -</td>
<td></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 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.

### r9492[0...9]

**BO/CO of BICO interconnections to other drives / BO/CO to drive**

<table>
<thead>
<tr>
<th>Data type: Unsigned32</th>
<th>Dyn. index: -</th>
<th>Access level: 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group: Commands</td>
<td>Unit group: -</td>
<td></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 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.
2 Parameters

2.2 List of parameters

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.

<table>
<thead>
<tr>
<th>p9493[0...9]</th>
<th>Reset BICO interconnections to other drives / Reset BICO to dry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Setting to reset the BICO interconnections to other drives. Each interconnection can be individually reset.</td>
</tr>
<tr>
<td>Value:</td>
<td>0: Set connection to 0 1: Set connection to 1 (100 %) 2: Set connection to factory setting 15: Finished</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: r9490, r9491, r9492</td>
</tr>
<tr>
<td>Note:</td>
<td>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.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p9495</th>
<th>BICO behavior for de-activated drive objects / Behav for deact DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Sets the behavior for 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).</td>
</tr>
<tr>
<td>Value:</td>
<td>0: Inactive 1: Save interconnections and establish the factory setting</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p9496, p9497, p9498, p9499</td>
</tr>
<tr>
<td>Note:</td>
<td>For p9495 = 0, the following applies: - the number of interconnections is zero (p9497 = 0). For p9495 not equal to 0, the following applies: - 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).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p9496</th>
<th>BICO behavior when activating drive objects / Behav when act DO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Sets the behavior when activating BICO interconnections to drive objects that are either not capable of operation or have been deactivated.</td>
</tr>
<tr>
<td>Value:</td>
<td>0: Inactive 1: Restore the interconnections from the list 2: Delete the interconnections from the list</td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

Dependency: Refer to: p9495, p9497, p9498, p9499
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

p9497 BICO interconnections to de-activated drive objects number / Interconn obj qty
All objects
Can be changed: T Calculated: - Access level: 3
Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: Commands Unit group: - Unit selection: -
Not for motor type: - Scalling: - Expert list: 1
Min Max Factory setting
0 65535 0

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

p9498[0...29] BICO BI/CI parameters to de-activated drive objects / Bi/CI to deact obj
All objects
Can be changed: T Calculated: - Access level: 3
Data type: Unsigned32 Dyn. index: - Func. diagram: -
P-Group: Commands Unit group: - Unit selection: -
Not for motor type: - Scalling: - Expert list: 1
Min Max Factory setting
- - 0

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
Note: A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.

p9499[0...29] BICO BO/CO parameters to de-activated drive objects / BO/CO to deact obj
All objects
Can be changed: T Calculated: - Access level: 3
Data type: Unsigned32 Dyn. index: - Func. diagram: -
P-Group: Commands Unit group: - Unit selection: -
Not for motor type: - Scalling: - Expert list: 1
Min Max Factory setting
- - 0

Description: Displays the saved BO/CO parameters (signal source), which are located on drive objects that are either not capable of operation.
Dependency: Refer to: p9495, p9496, p9498
Note: A BICO interconnection (signal sink, signal source) is displayed in the same index of p9498 and p9499.

r9900 Actual topology number of indices / Act topo indices
CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S
Can be changed: - Calculated: - Access level: 3
Data type: Unsigned16 Dyn. index: - Func. diagram: -
P-Group: Topology Unit group: - Unit selection: -
Not for motor type: - Scalling: - Expert list: 0
Min Max Factory setting
- - -

Description: Displays the number of indices of the actual topology.
Dependency: Refer to: r9901
### 2 Parameters

#### 2.2 List of parameters

**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>
</tr>
</thead>
<tbody>
<tr>
<td>r9901[0...n]</td>
<td>Actual topology / Act topo</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index: r9900</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Topology</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:** Displays the actual topology of the drive unit.

The actual topology is 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>
</tr>
</thead>
<tbody>
<tr>
<td>p9902</td>
<td>Target topology number of indices / TargetTopo indices</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: Topology</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type:</td>
<td>Scaling:</td>
<td>Expert list: 0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>65535</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:** Sets the number of target topology indices.

**Dependency:** Refer to: p9903

**Note:** Only for internal Siemens use.

The parameter is not displayed for the STARTER commissioning software.
## 2.2 List of parameters

### p9903[0...n] Target topology / Target topo

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** Topology
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** FFFF hex
- **Access level:** 3
- **Dyn. index:** p9902
- **Unit group:** -
- **Scaling:** -
- **Unit selection:** -
- **Expert list:** 0
- **Factory setting:** 0000 hex

**Description:**
Sets the target topology of the drive unit.
The target topology is subdivided 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.

### p9904 Topology comparison acknowledge differences / Topo_compare ackn

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** C1(1)
- **Data type:** Unsigned32
- **P-Group:** Topology
- **Not for motor type:** -
- **Min:** 0000 hex
- **Max:** FFFF FFFF hex
- **Access level:** 3
- **Dyn. index:** -
- **Unit group:** -
- **Scaling:** -
- **Unit selection:** -
- **Expert list:** 1
- **Factory setting:** 0000 hex

**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:

- **p9904 = 1** -> the procedure is started.
- **p9904 = 0** after starting -> the procedure has been successfully completed.
- **p9904 = 1** after starting -> the procedure has not been successfully completed.

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).

**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.

**Description:**
In order to permanently accept the data, it is necessary to save in a non-volatile fashion (p0977).

**Data type:** Unsigned16

**P-Group:** Topology

**Not for motor type:** -

**Min:** 0

**Max:** 2

**Expert list:** 1

**Factory setting:** 0

**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)
- hardware version (e.g. "A")
- Serial No. (e.g. "T-P30050495")
### 2 Parameters

#### 2.2 List of parameters

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

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index:</td>
<td>Unit group:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scrolling:</td>
<td>Expert list:</td>
<td>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:**

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

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index:</td>
<td>Unit group:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scrolling:</td>
<td>Expert list:</td>
<td>1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>99</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**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)

#### p9909 Topology comparison component replacement / Topo_cmpr replace

<table>
<thead>
<tr>
<th>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index:</td>
<td>Unit group:</td>
<td>3</td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Scrolling:</td>
<td>Expert list:</td>
<td>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>1</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.

### p9910 Target topology accept additional components / Add comp accept

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1(1)</td>
<td>Accept additional inserted DRIVE-CLiQ components into the target topology. The corresponding drive objects are added to the project.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### p9915 DRIVE-CLiQ data transfer error shutdown threshold master / DQ fault master

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1(1)</td>
<td>Only for internal Siemens service purposes.</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 hex</td>
<td>0007 07FF hex</td>
<td>0007 02FF hex</td>
</tr>
</tbody>
</table>

### p9916 DRIVE-CLiQ data transfer error shutdown threshold slave / DQ fault slave

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: C1(1)</td>
<td>Only for internal Siemens service purposes.</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: Topology</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0000 hex</td>
<td>0007 07FF hex</td>
<td>0007 02FF hex</td>
</tr>
</tbody>
</table>

### p9920[0...99] Licensing enter license key / Enter license key

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
<td>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)</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
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
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 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>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>0</td>
<td>Factory setting</td>
</tr>
<tr>
<td>1</td>
<td></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
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.

<table>
<thead>
<tr>
<th>r9925[0...99]</th>
<th>Firmware file incorrect / FW file incorr</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Max</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

Description: Displays the directory and name of the file whose status as shipped from the factory was identified as impermissible.

Dependency: Refer to: r9926
Note:
The directory and name of the file is displayed in the ASCII code.
2 Parameters

2.2 List of parameters

**r9926**
- **Firmware check status / FW check status**
  - **CU_DC, CU_DC_R, CU_DC_S, CU_DC_S**
  - **Can be changed:** -
  - **Data type:** Unsigned8
  - **P-Group:** -
  - **Not for motor type:** -
  - **Min:** -
  - **Max:** -

**Description:**
Displays the status when the firmware is checked when the system is booted.
0: Firmware not yet checked.
1: Check running.
2: Check successfully completed.
3: Check indicates an error.

**Dependency:**
Refer to: r9925

**p9930[0...8]**
- **System logbook activation / SYSLOG activation**
  - **CU_DC, CU_DC_R, CU_DC_S, CU_DC_S**
  - **Can be changed:** U, T
  - **Data type:** Unsigned8
  - **P-Group:** -
  - **Not for motor type:** -
  - **Min:** 0
  - **Max:** 255

**Description:**
Only for service purposes.

**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)

**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...179]**
- **System logbook module selection / SYSLOG mod select.**
  - **CU_DC, CU_DC_R, CU_DC_S, CU_DC_S**
  - **Can be changed:** U, T
  - **Data type:** Unsigned32
  - **P-Group:** -
  - **Not for motor type:** -
  - **Min:** 0000 hex
  - **Max:** FFFF FFFF hex

**Description:**
Only for service purposes.

**p9932**
- **Save system logbook EEPROM / SYSLOG EEPROM save**
  - **CU_DC, CU_DC_R, CU_DC_S, CU_DC_S**
  - **Can be changed:** U, T
  - **Data type:** Unsigned8
  - **P-Group:** -
  - **Not for motor type:** -
  - **Min:** 0
  - **Max:** 255

**Description:**
Only for service purposes.
2 Parameters
2.2 List of parameters

**r9935.0**

**BO: POWER ON delay signal / POWER ON t\_delay**

- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Access level:** 3

**Description:**
Display and binector output for a delay after POWER ON.

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:**
- **Bit**
- **Signal name**
- **Signal 1**
- **Signal 0**
- **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>POWER ON delay signal</td>
<td>High</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

**r9936[0...199]**

**DRIVE-CLiQ diagnostic error counter connection / DQdiag err counter**

- **Can be changed:** -
- **Data type:** Integer32
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Access level:** 4

**Description:**
Displays the error counter for the individual DRIVE-CLiQ connections/cables.

- r9936[0]: sum of the error counter for all connections
- r9936[1]: not used
- r9936[2]: error counter for the feeder cable to DRIVE-CLiQ components with component number 2
- ...
- r9936[199]: error counter for the feeder cable to DRIVE-CLiQ components with component number 199

The feeder cable is the DRIVE-CLiQ cable that is connected to a component in the direction of the Control Unit.

**Dependency:**
Refer to: p9937, p9938

**p9937**

**DRIVE-CLiQ diagnostic configuration / DQ diag config**

- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**
- **Access level:** 4

**Description:**
Sets the configuration for the DRIVE-CLiQ diagnostics (error counter r9936). Using this function, connections and cables of DRIVE-CLiQ connections can be checked for transfer errors. The error counter is evaluated in the PHY blocks involved.

**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>Alarm for connection error</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Reset error counter</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r9936, p9938

**Note:**
Re bit 00:
To activate this function, p9938 must be set to 0 (inactive).
After changing the error counter (r9936), an appropriate alarm is output. The alarm automatically disappears after 5 seconds.

Re bit 08:
With p9937.8 = 1, the error counters are reset (r9936[0...199]).
After the reset, p9937.8 is automatically set to 0.
2 Parameters
2.2 List of parameters

p9938 DRIVE-CLiQ detailed diagnostics configuration / DQ diag config

Can be changed: U, T
Data type: Integer16
P-Group: -
Not for motor type: -

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the configuration for the DRIVE-CLiQ detailed diagnostics (r9943).</td>
<td>0: Inactive 1: Sum send and receive errors 2: Only send errors 3: Only receive errors 4: Siemens internal 5: Siemens internal 6: Siemens internal</td>
<td>The functions in p9938 can only be set for p9937.0 = 0. Refer to: r9936, p9937, p9939, p9942</td>
<td>If value = 0:  - detailed diagnostics is inactive.  - the error counter is active (r9936). If value &gt; 0:  - the error counter is inactive (r9936).  - the detailed diagnostics as configured is active (r9943).</td>
</tr>
</tbody>
</table>

p9939 DRIVE-CLiQ detailed diagnostics time interval / DQ detail t_interv

Can be changed: U, T
Data type: FloatingPoint32
P-Group: -
Not for motor type: -

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the time interval for recording the error counter in r9943.</td>
<td>1 [s] 3600 [s] 1 [s]</td>
<td>Refer to: r9936, p9938, p9942, r9943</td>
</tr>
</tbody>
</table>

p9941 Target topology feature delete all components / Feature delete

Can be changed: C1(1)
Data type: Unsigned32
P-Group: Topology
Not for motor type: -

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>0 1 0</td>
<td>p9941 is automatically set to 0 at the end of the operation. A warm restart is triggered automatically after p0009 = 0.</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p9942</strong></td>
<td>DRIVE-CLiQ detailed diagnostics select individual connection / DQ detail conn</td>
</tr>
<tr>
<td><strong>r9943</strong></td>
<td>DRIVE-CLiQ detailed diag. individual connection error counter / DQ det err counter</td>
</tr>
<tr>
<td><strong>r9975[0...7]</strong></td>
<td>System utilization measured / Sys util meas</td>
</tr>
</tbody>
</table>

### p9942

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 199
- **Factory setting:** 0

**Description:**
Sets the component, whose feeder cable is monitored for data transfer errors.

**Dependency:**
Refer to: r9936, p9938, p9939, r9943

**Note:**
Errors that have occurred in the selected time interval (p9939) can be read-out from r9943.

### r9943

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -
- **Data type:** Integer32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Displays the connection errors of the individual connection that have occurred within the time interval (p9939).

**Dependency:**
Refer to: r9936, p9938, p9939, p9942

### r9975[0...7]

- **CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** - [%]

**Description:**
Displays the measured system utilization.
The higher the value displayed, the higher the system utilization.

**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

**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).
2 Parameters

2.2 List of parameters

### r9976[0...7] System utilization / Sys util

| CU_DC, CU_DC_R, | Can be changed: - | Calculated: - | Access level: 3 |
| CU_DC_R_S, | Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: - |
| CU_DC_S | P-Group: - | Unit group: - | Unit selection: - |

**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

**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.

**Description:**

Displays the system utilization.

If the utilization is greater than 100%, fault F01054 is output.

**Total utilization:**

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

### r9979 Sampling time with largest total utilization / t_sampl lg total

| CU_DC, CU_DC_R, | Can be changed: - | Calculated: - | Access level: 3 |
| CU_DC_R_S, | Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: - |
| CU_DC_S | P-Group: - | Unit group: - | Unit selection: - |

**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

**Dependency:**

Refer to: r7901, r9976

**Note:**

The largest total utilization is displayed in r9976[5].

**Total utilization:**

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

### r9980[0...165] Sampling times utilization calculated / t_sampl util calc

| CU_DC, CU_DC_R, | Can be changed: - | Calculated: - | Access level: 4 |
| CU_DC_R_S, | Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: - |
| CU_DC_S | P-Group: - | Unit group: - | Unit selection: - |

**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

**Dependency:**

Refer to: r9979, r9980

**Note:**

The largest total utilization is displayed in r9976[5].

**Total utilization:**

Computing time load of sampling time involved including load from higher-priority sampling times (interrupts).

**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
2 Parameters

2.2 List of parameters

[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
[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
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>[74]</td>
<td>Net utilization 37</td>
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2 Parameters
2.2 List of parameters

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[161] = Total utilization 80
[162] = Net utilization 81
[163] = Total utilization 81
[164] = Net utilization 82
[165] = Total utilization 82

Dependency: Refer to: r7901, r9976, r9979
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).

r9981[0...165] Sampling times utilization measured / t_sampl util meas

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<th>Expert list:</th>
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<th>Max</th>
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Dependency: Refer to: r7901, r9976, r9979
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).
2 Parameters

2.2 List of parameters

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2 Parameters

2.2 List of parameters

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2 Parameters

2.2 List of parameters

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[164] = Net utilization 82
[165] = Total utilization 82

Dependency:
Refer to: r7901, r9975, r9980

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).

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Description:
Displays the calculated data memory utilization rates based on the existing target topology.

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[1] = Fast data memory 2
[3] = Fast data memory 4
[4] = Reserved

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Description:
Displays the measured data memory utilization rates based on the existing target topology.

Index:
[0] = Fast Memory 1
[1] = Fast Memory 2
[3] = Fast Memory 4
[4] = Heap

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Description:
Displays the utilization of the data memory by OA applications.
2 Parameters
2.2 List of parameters

Index:

[0] = Fast Memory 1
[1] = Fast Memory 2
[3] = Fast Memory 4
[4] = Reserved

r9986[0...7] DRIVE-CLiQ system load / DQ system load

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</table>

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.

r9987[0...7] DRIVE-CLiQ bandwidth load / DQ bandw load

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</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>
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<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 calculated DRIVE-CLiQ bandwidth 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.

r9988[0...7] DRIVE-CLiQ DPRAM load / DQ DPRAM load

<table>
<thead>
<tr>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<tbody>
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<td>-</td>
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<table>
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<th>Func. diagram:</th>
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<tbody>
<tr>
<td>FloatingPoint32</td>
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<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
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<tbody>
<tr>
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<table>
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<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
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<tbody>
<tr>
<td>-</td>
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<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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</table>

Description:
Displays the calculated DRIVE-CLiQ DPRAM 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.

p9990 DO memory usage actual value determination selection / Mem_use ActVal sel

<table>
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<tr>
<td>U, T</td>
<td>-</td>
<td>4</td>
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<table>
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<table>
<thead>
<tr>
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<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>-</td>
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</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
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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></td>
</tr>
</tbody>
</table>

Description:
The meaning of the parameter differs for reading and writing.

Read:
- Returns the number of memory areas monitored.

Write:
- Memory usage of a drive object: Enter drive object number
- Memory usage of the complete system: Enter value 65535
## 2 Parameters

### 2.2 List of parameters

#### r9991[0...4] Memory usage drive object actual value / Mem_use DO ActVal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
<th>Index</th>
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</thead>
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<tr>
<td>P-Group</td>
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</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
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</table>

#### r9992[0...4] Memory usage drive object reference value / Mem_use DO ref val

<table>
<thead>
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<th>Setting</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
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</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
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<td></td>
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<tr>
<td>Min</td>
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<td></td>
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<td>Max</td>
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#### r9993[0...] Memory usage OA application / Mem_use QA

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
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<tr>
<td>P-Group</td>
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</tr>
<tr>
<td>Not for motor type</td>
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<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### r9999[0...99] Software error internal supplementary diagnostics / SW_err int diag

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Setting</th>
<th>Description</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type</td>
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</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
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</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
- For internal Siemens troubleshooting.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50000</td>
<td>Operating display / Op_display</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 1</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2651, 6905</td>
</tr>
<tr>
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<td>P-Group: -</td>
</tr>
<tr>
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<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
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<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></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Description:
- o0.0 No torque direction switched on
- o0.1 Torque direction I switched on
- o0.2 Torque direction II switched on
- o0.9 Wait for enable from master
- o1.0 Wait time for brake opening time running
- o1.1 Wait for operating enable at terminal 13
- o1.2 Wait for operating enable (signal source acc. to p0852)
- o1.3 Wait after withdrawing a jog command running
- o1.4 Wait for field reversal to be implemented or for "Braking by field reversal" to be withdrawn
- o1.5 Wait for operating enable from the optimization run
- o1.6 Wait for withdrawal of the immediate pulse inhibit (signal source acc. to p50177)
- o1.7 Wait until SINAMICS DCMs connected in parallel are in status o0
- o1.8 Wait until the power unit topology has been switched over
- o2.0 Wait for setpoint r52193 > p50091[1]
- o3.0 Wait for the thyristor check to be completed
- o3.1 Wait for the line symmetry check to be completed
- o3.2 Wait for a DC contactor to pick up
- o3.3 Wait for the feedback signal, "line contactor" (signal source acc. to p50691)
- o4.0 Wait for voltage at power connections 1U1, 1V1, 1W1
- o4.1 Wait for pre-charging of the CCP's chopper capacitors to be completed
- o4.5 Wait until the field current actual value r52265 is > p50396 and until "i_field ext > if_min" (see p50265)
- o5.1 Wait for voltage at power connections 3U1, 3W1

Note:
A specific time, which can be set in p50089, represents the maximum wait time in states o4 and o5 combined. If, after this time, the relevant conditions have still not been met, the corresponding error message will be triggered.

- o6.0 Wait for the auxiliaries to power up (wait time p50093)
- o6.1 Wait for a setpoint <= p50091[0] at the RFG input (p520193)
- o7.0 Wait for power-on via terminal 12
- o7.1 Wait for power-on (signal source according to p0840)
- o7.2 Wait for the "Braking by field reversal" command to be withdrawn
- o7.3 Wait for parallel master to power up
- o7.4 Optimization run executes pre-work/post-work
- o7.5 Wait until the SINAMICS DCM devices connected in parallel are ready to be switched on
- o7.6 Wait for "Load MLFB" to be completed (carried out by manufacturer prior to delivery)
- o8.0 Wait for closing lockout to be acknowledged
- o8.1 Simulation mode active (see p51840)
- o9.1 Quick stop (OFF3) (signal source acc. to p0848) present
- o9.2 Quick stop (OFF3) (signal source acc. to p0849) present
- o10.1 Voltage disconnect (OFF2) (signal source acc. to p0844) pending
- o10.2 Voltage disconnect (OFF2) (signal source acc. to p0845) pending
- o10.3 E stop (safety shutdown) (terminal 105/106) pending
- o10.6 CUD right
- o11.0 Fault
- o12.0 Initializ. of line voltage sensing for field in progress
- o12.1 Initializ. of line voltage sensing for armature in progress
- o12.3 Read out data from gating modules (armature and field)
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50012</td>
<td>Motor temperature / Mot temp</td>
</tr>
<tr>
<td>r50013[0..4]</td>
<td>Temperature sensor/Module / Temp sensor/Mod</td>
</tr>
<tr>
<td>r50014[0..1]</td>
<td>Temperature rises calculated / Temp rise calc</td>
</tr>
</tbody>
</table>

**2.4 Offset calibr. of curr. act. val. sensing being performed**

**2.5 Read out data from the power unit**

**2.6 Wait for second processor (TMS320) to go into normal operation**

### r50012 Motor temperature / Mot temp

**DC_CTRL**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 8030
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** - [°C]
- **Max:** - [°C]
- **Factory setting:** - [°C]

**Description:**
Displays the motor temperature.

**Dependency:**
The temperature value is only displayed when using one of the following temperature sensors:
- KTY84 (p50490 = 1): measuring range = -40 °C to +300 °C
- PT100 (p50490 = 6): measuring range = -200 °C to +300 °C
- NTC thermistor K227 (p50490 = 7): measuring range = +85 °C to +200 °C
- PT1000 (p50490 = 8): measuring range = -200 °C to +300 °C

**Note:**
If p50490 = 0, 2 to 5, a value of 0 is displayed.

### r50013[0..4] Temperature sensor/Module / Temp sensor/Mod

**DC_CTRL**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 8048
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** - [°C]
- **Max:** - [°C]
- **Factory setting:** - [°C]

**Description:**
Displays the temperature of the various temperature sensors for device and modules.

**Index:**
- [0] = Temperature sensor 1
- [1] = Temperature sensor 2
- [2] = Temperature sensor 3
- [4] = CUD Control Unit temperature

**Note:**
Temperature sensors which are not in use return a high negative value (approx. -200 °C).

### r50014[0..1] Temperature rises calculated / Temp rise calc

**DC_CTRL**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 8038, 8042
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** - [%]
- **Max:** - [%]
- **Factory setting:** - [%]

**Description:**
Displays the values calculated for the temperature rise of the motors and the thyristors.

**Index:**
- [0] = Motor temperature rise
- [1] = Thyristor temperature rise

**Dependency:**
Refer to: p50075, r52310
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r50015</strong></td>
<td>Armature circuit rms value of phase-to-phase line voltage / Arm cct V_line rms</td>
</tr>
<tr>
<td><strong>r50016</strong></td>
<td>Field circuit line voltage rms value / F cct V_line rms</td>
</tr>
<tr>
<td><strong>r50017[0...1]</strong></td>
<td>Line frequency / f_line</td>
</tr>
<tr>
<td><strong>r50018</strong></td>
<td>Armature firing angle / Arm fir angle</td>
</tr>
<tr>
<td><strong>r50019</strong></td>
<td>Armature current actual value / Arm I_act</td>
</tr>
</tbody>
</table>

### Parameter details:

#### r50015
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6950
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** Max
- **Max:**
- **Factory setting:**

**Description:** Displays the phase-to-phase line voltage in the armature circuit (rms value).

#### r50016
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6952
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** Max
- **Max:**
- **Factory setting:**

**Description:** Displays the line voltage in the field circuit (rms value).

#### r50017[0...1]
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6854, 6950, 6952
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** Max
- **Max:**
- **Factory setting:**

**Index:**
- 0 = Armature circuit
- 1 = Field circuit

**Description:** Displays the line frequency in the armature circuit/field circuit.

#### r50018
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6860
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** Max
- **Max:**
- **Factory setting:**

**Description:** Displays the firing angle on the armature circuit.

#### r50019
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 1
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 6850
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** Max
- **Max:**
- **Factory setting:**

**Description:** Displays the internal signed current actual value in the armature circuit. The value is averaged over 6 cycles.

**Note:**
- This parameter is referred to the rated motor current.
- The following applies: 100% corresponds to p50100[ii], whereby ii = active DDS.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50020</td>
<td>Closed-loop armature current control motor current set abs value / ( I_{a\ ctr\ l_set\ abs} )</td>
<td>Displays the absolute value of the motor current setpoint. This parameter is referred to the rated motor current. The following applies: 100% corresponds to ( p50100[ii] ), whereby ii = active DDS</td>
</tr>
<tr>
<td>r50021</td>
<td>Torque limiting torque setpoint after limiting / ( T_{q\ e\ set\ after\ lim} )</td>
<td>Displays the torque setpoint after limiting. 1 corresponds to 0.1% of the rated torque of the motor.</td>
</tr>
<tr>
<td>r50022</td>
<td>Torque limiting torque setpoint before limiting / ( T_{q\ e\ set\ bef\ lim} )</td>
<td>Displays the torque setpoint before limiting. 1 corresponds to 0.1% of the rated torque of the motor.</td>
</tr>
<tr>
<td>r50025</td>
<td>Speed controller actual value selection / ( \text{Act sel} )</td>
<td>Display and connector output of the selected speed actual value on the speed controller.</td>
</tr>
<tr>
<td>r50028</td>
<td>Speed setpoint before the ramp-function generator display / ( \text{n_set\ bef\ RFG\ disp} )</td>
<td>Displays the speed setpoint before the ramp-function generator.</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r52193
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r50029</strong></td>
<td>Speed setpoint AOP30 display / n_set AOP30 disp</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
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<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 3113</td>
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</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: p2000 Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the speed setpoint from the Advanced Operator Panel 30 (AOP30).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r50030[0...3]</strong></td>
<td>Device fan speed / Dev fan n</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 8047</td>
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<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the speed of the device fan.

**Index:**
- [0] = Fan 1 speed
- [1] = Fan 2 speed
- [2] = Fan 3 speed
- [3] = Fan 4 speed

**Dependency:**
Refer to: p50082, p50096
Refer to: F60167

**Note:**
The following options are available, dependent upon the power unit used:
- No fans
- 2 DC fans
- 1 AC fan
- 2 AC fans
- 2 AC fans + 1 DC fan

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r50033</strong></td>
<td>Field voltage actual value / Uf act val</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 6902</td>
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<tr>
<td>P-Group:</td>
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</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the actual value of the field voltage.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r50034</strong></td>
<td>Field firing angle / Field fir angle</td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 6915</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scalling: - Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the firing angle on the field circuit.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>ID</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit 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>r50035</td>
<td>Field current controller actual value / I_field ctr act</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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<td>DC_CTRL</td>
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<td></td>
<td>Calculated: -</td>
<td>-</td>
<td>-</td>
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<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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<td>Func. diagram: 6910</td>
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<tr>
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<td>P-Group: -</td>
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<td></td>
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<td></td>
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<td>Unit selection: -</td>
</tr>
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<td>Expert list: 1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>Description: Displays the actual value on the field current controller.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| r50036 | Field current controller setpoint / I_field ctr set                        | 1            | FloatingPoint32 | -          | -        | -          | -              | 1            | - [%]    | - [%]    | - [%]            |
| DC_CTRL | Can be changed: -                                                           |              | Calculated: -  | -          | -        | -          | -              |              | - [%]    | - [%]    | - [%]            |
|       | Data type: FloatingPoint32                                                 |              |                |            |          |            |                |              |          |          | Func. diagram: 6910 |
|       | P-Group: -                                                                 |              |                |            |          |            |                |              |          |          | Unit selection: -   |
|       | Not for motor type: -                                                      |              |                |            |          |            |                |              |          |          | Expert list: 1     |
|       | Min                                                                          |              | Max            |            |          |            |                |              |          |          | Factory setting    |
|       | Description: Displays the setpoint value on the field current controller.   |              |                |            |          |            |                |              |          |          |                  |

| r50037 | EMF actual value / EMF act                                                  | 1            | FloatingPoint32 | -          | -        | -          | -              | 1            | - [V]    | - [V]    | - [V]            |
| DC_CTRL | Can be changed: -                                                           |              | Calculated: -  | -          | -        | -          | -              |              | - [V]    | - [V]    | - [V]            |
|       | Data type: FloatingPoint32                                                 |              |                |            |          |            |                |              |          |          | Func. diagram: 6902 |
|       | P-Group: -                                                                 |              |                |            |          |            |                |              |          |          | Unit selection: -   |
|       | Not for motor type: -                                                      |              |                |            |          |            |                |              |          |          | Expert list: 1     |
|       | Min                                                                          |              | Max            |            |          |            |                |              |          |          | Factory setting    |
|       | Description: Displays the EMF actual value.                                |              |                |            |          |            |                |              |          |          |                  |

| r50038 | Armature voltage actual value / Ua act                                      | 1            | FloatingPoint32 | -          | -        | -          | -              | 1            | - [V]    | - [V]    | - [V]            |
| DC_CTRL | Can be changed: -                                                           |              | Calculated: -  | -          | -        | -          | -              |              | - [V]    | - [V]    | - [V]            |
|       | Data type: FloatingPoint32                                                 |              |                |            |          |            |                |              |          |          | Func. diagram: 6902 |
|       | P-Group: -                                                                 |              |                |            |          |            |                |              |          |          | Unit selection: -   |
|       | Not for motor type: -                                                      |              |                |            |          |            |                |              |          |          | Expert list: 1     |
|       | Min                                                                          |              | Max            |            |          |            |                |              |          |          | Factory setting    |
|       | Description: Displays the actual value of the armature voltage.            |              |                |            |          |            |                |              |          |          |                  |

| r50039 | Motor EMF setpoint / Mot EMF set                                            | 1            | FloatingPoint32 | -          | -        | -          | -              | 1            | - [V]    | - [V]    | - [V]            |
| DC_CTRL | Can be changed: -                                                           |              | Calculated: -  | -          | -        | -          | -              |              | - [V]    | - [V]    | - [V]            |
|       | Data type: FloatingPoint32                                                 |              |                |            |          |            |                |              |          |          | Func. diagram: 6900 |
|       | P-Group: -                                                                 |              |                |            |          |            |                |              |          |          | Unit selection: -   |
|       | Not for motor type: -                                                      |              |                |            |          |            |                |              |          |          | Expert list: 1     |
|       | Min                                                                          |              | Max            |            |          |            |                |              |          |          | Factory setting    |
|       | Description: Displays the EMF setpoint calculated from the motor data.     |              |                |            |          |            |                |              |          |          |                  |
## List of parameters

### r50047[0...31] Faults additional information / Fault add info

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<thead>
<tr>
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<th>Func. diagram:</th>
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<tr>
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<th>Unit group:</th>
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<tbody>
<tr>
<td>-</td>
<td>-</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Expert list:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
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<td>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 more detailed information about faults which have occurred with numbers 60000 and higher.

[0] = Fault value

[1] = Additional information about the most recent fault which occurred (see corresponding fault)

... 

[30] = Additional information about the most recent fault which occurred (see corresponding fault)

[31] = Fault number

### p50051 Optimization run selection / Opt run sel

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: C2(1), T</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Func. diagram:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integer16</td>
<td>-</td>
<td>2660</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</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>0</td>
<td>30</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Setting to select the optimization run for the next ON command.

**Value:**

- 0: No optimization run
- 23: Armature current control (for inductive loads)
- 24: Closed-loop field current control
- 25: Closed-loop armature current control
- 26: Closed-loop speed control and moment of inertia
- 27: Field weakening control
- 28: Friction compensation
- 29: Torsion optimization
- 30: CCP (Converter Commutation Protector)

**Notice:**

If value = 30:

The CCP optimization run does not require a switch-on command and is directly started when selecting the value.

**Note:**

Only a value of 0 can be set at the right-hand CUD.

A value not equal to 0 can only be set in the operating states 07.0 and 07.1 if an optimization run is presently not active.

If value = 0:

No optimization run has been selected.

If value = 23:

Optimization run for pre-control and the current controller for the armature converter (for inductive loads).

If value = 24:

Optimization run for pre-control and the current controller for the field converter.

If value = 25:

Optimization run for pre-control and the current controller for the armature converter.

If value = 26:

Optimization run for the speed controller and moment of inertia.

If value = 27:

Optimization run for field weakening.

If value = 28:

Optimization run for friction compensation.

If value = 29:

Optimization run for speed controllers and moment of inertia for drives that are capable of oscillation.

If value = 30:

Optimization run for CCP (Converter Commutation Protector).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50052 Optimization run status / Opt run status</td>
<td>Displays the status during the optimization run.</td>
<td>0: No optimization run</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed:</td>
<td>Calculated:</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index:</td>
<td>Unit group:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit selection:</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>701</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Displays the status during the optimization run.

**Value:**
0: No optimization run
1: Wait for operating state 7.4
2: Check prerequisites
3: Save original interconnection
4: Interconnect optimization parameters
5: Wait for operating state 0.x or 1.5
6: Set optimized parameter values
7: Wait for operating state 8.0
8: Troubleshooting
9: Exit optimization run
101: Set field current to 100%
102: Measure field circuit resistance
103: Measure field circuit inductance
201: Wait for field decay
202: Set armature current to 100%
203: Measure armature circuit resistance
204: Measure armature circuit inductance
301: Record speed characteristic
302: Stop motor
401: Calculate nominal EMF
402: Calculate nominal speed
403: Record field characteristic 91 % field current
404: Record field characteristic 83 % field current
405: Record field characteristic 76 % field current
406: Record field characteristic 70 % field current
407: Record field characteristic 65 % field current
408: Record field characteristic 60.5 % field current
409: Record field characteristic 56.5 % field current
410: Record field characteristic 53 % field current
411: Record field characteristic 50 % field current
412: Record field characteristic 47 % field current
413: Record field characteristic 44 % field current
414: Record field characteristic 41 % field current
415: Record field characteristic 38 % field current
416: Record field characteristic 35 % field current
417: Record field characteristic 32 % field current
418: Record field characteristic 29 % field current
419: Record field characteristic 26 % field current
420: Record field characteristic 23 % field current
421: Record field characteristic 20 % field current
422: Record field characteristic 17 % field current
423: Record field characteristic 14 % field current
424: Record field characteristic 11 % field current
425: Record field characteristic 8 % field current
426: Recording of field characteristic is complete
501: Wait for field to build up
502: Recording the friction characteristic - 10% rated speed
503: Recording the friction characteristic - 20% rated speed
504: Recording the friction characteristic - 30% rated speed
505: Recording the friction characteristic - 40% rated speed
506: Recording the friction characteristic - 50% rated speed
507: Recording the friction characteristic - 60% rated speed
508: Recording the friction characteristic - 70% rated speed
509: Recording the friction characteristic - 80% rated speed
2 Parameters
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510: Recording the friction characteristic - 90% rated speed
511: Recording the friction characteristic - 100% rated speed
701: Calculation is carried out

r50060[0...14] Software version / SW version

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Func. diagram: -</td>
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</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 existing software versions.

Index:
- [0] = Complete device version external
- [1] = Complete device version internal
- [2] = DSAC Bootloader Version
- [3] = BIOS version
- [5] = Base system version
- [6] = DC MASTER version
- [7] = TMS version
- [8] = TMS image version
- [9] = TMS bootloader version
- [10] = TMS bootloader image version
- [12] = In-plant information
- [13] = DCC version
- [14] = FBLOCKS version

Note: Some of these software versions are also displayed at other parameters.

Index 0 <-> r7844[1]
Index 1 <-> r7844[0]
Index 2 <-> r0197
Index 5 <-> r0018
Index 6, 13, 14 <-> r4957[x]

r50063[0...1] CUD information / CUD info

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
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<tbody>
<tr>
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<td>Func. diagram: 8054</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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 information about the Control Unit DC MASTER (CUD).

Index:
- [0] = CUD position
- [1] = CUD variant

Note:
- Re index 0:
  Indicates the position of the Control Unit DC MASTER (CUD) in the device.
  - Value = 0: CUD is installed on the left.
  - Value = 1: CUD is installed on the right.
- Re index 1:
  Indicates the variant of the Control Unit DC MASTER (CUD).
  - Value = 0: CUD is the standard version.
  - Value = 1: CUD is the advanced version.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p50066</th>
<th>Power unit I2t monitoring derating factor K1 limit value / PU fact K1 lim val</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Can be changed:</strong> T</td>
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<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0.50</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Description:**
Sets the limit value for derating factor K1 (thermal power reduction factor).
This limit value is necessary for devices with option L99.
If this limit value is fallen below, then an appropriate alarm is output.

**Dependency:**
Refer to: A60082

**Note:**
The derating factor K1 should be taken from the following reference:
SINAMICS DCM Operating Instructions - Chapter "Sensor for ambient or air intake temperature"

<table>
<thead>
<tr>
<th>p50067</th>
<th>Load class / Load class</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
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</tr>
<tr>
<td><strong>Data type:</strong> Integer16</td>
<td><strong>Dyn. index:</strong> -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>1</td>
<td>5</td>
</tr>
</tbody>
</table>

**Description:**
Load class setting.
Dependent upon the selected load class, the device’s rated direct current is reduced to a value which will vary according to power unit and load class.
The current value of the device's rated direct current is displayed via r50072[1].

**Value:**
1: DC I
2: DC II
3: DC III
4: DC IV
5: US rating

**Note:**
If the device's rated direct current is also reduced via p50076[0], the smaller of the two values will be applied.
If p50067 is set to a value > 1, you must ensure that the "dynamic overload capability of the power unit" is enabled (in other words, a value > 0 must be set in p50075).
The device does not check for compliance with the load class set in p50067. If the power unit is able to tolerate it, the device can run at overload for longer than is permitted by the load class.
The actual permissible overload duration for each power unit is always longer than the overload duration permitted by the load class. The device checks for compliance with the overload duration actually permitted by the power unit.

<table>
<thead>
<tr>
<th>r50068 [0...95]</th>
<th>Power unit nameplate options / PU options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
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</tr>
<tr>
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</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Displays the options according to the power unit’s nameplate.

**Note:**
The individual digits of the number are displayed in ASCII code in the indices.
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
### r50069[0...31] Power unit serial number / PU ser no.

**Description:** Displays the serial number of the power unit.

**Note:** The individual digits of the number are displayed in ASCII code in the indices. An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Unit Selection</th>
<th>Factory Setting</th>
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</table>

### r50070[0...31] Power unit order number / PU Order No.

**Description:** Displays the order number (MLFB) of the power unit.

**Note:** The individual digits of the number are displayed in ASCII code in the indices. An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Access Level</th>
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<th>Unit Selection</th>
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### r50071 Device rated line-side voltage armature / Device Ua_rated

**Description:** Displays the device rated line-side voltage for the armature as indicated on the device's nameplate.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50071</td>
<td>FloatingPoint32</td>
<td>1</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

### r50072[0...1] Device rated direct current armature / Device Ia rated

**Description:** Displays the device rated direct current (armature).

**Index:**
- [0] = Device rated direct current armature
- [1] = Reduced rated direct current armature

**Note:** Device rated direct current (armature) as indicated on the device's nameplate.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50072</td>
<td>FloatingPoint32</td>
<td>1</td>
<td>-</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>r50073[0...1]</th>
<th>Device rated direct current field / Device If_{rated}</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>[A]</td>
<td>- [A]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the device rated direct current (field).

**Index:**
- [0] = Device rated direct current field
- [1] = Reduced rated direct current field

**Note:**
When using an external field device (p50084 > 20) the rated device DC field current is taken from the value set in p51838.

- **Re index 0:**
  - Device rated direct current (field) as indicated on the device's nameplate (output direct current at power connections 3C and 3D).
- **Re index 1:**
  - Actual device rated direct current (field) according to the setting in parameter p50076[1].

<table>
<thead>
<tr>
<th>r50074</th>
<th>Device rated line-side voltage field / V_{rated field}</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>FloatingPoint32</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min:</td>
<td>Max</td>
</tr>
<tr>
<td>[Vrms]</td>
<td>- [Vrms]</td>
</tr>
</tbody>
</table>

**Description:**
Displays the device rated line-side voltage for the field as indicated on the device’s nameplate.

<table>
<thead>
<tr>
<th>p50075</th>
<th>Power unit I2t monitoring response / PU I2t mon resp</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Integer16</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>P-Group:</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>2</td>
</tr>
</tbody>
</table>

**Description:**
Sets the response for I2t monitoring of the power unit.

**Value:**
- 0: Dynamic overload not permitted
- 1: Dynamic overload possible, F60039
- 2: Dynamic overload possible, F60139

**Note:**
- **If value = 0:**
  - Dynamic overload capability is not permissible. The armature current setpoint (r52133) is limited to p50077 * r50072[1].
  - A value of 0 can only be set, if p50067 = 1.
- **If value = 1:**
  - Dynamic overload capability is permissible. As long as the calculated temperature rise of the thyristors does not exceed the permissible value, the armature current setpoint is limited to the value p50077 * r50072[1] * 180%.
  - If the permissible value is exceeded, the device will protect itself by reducing the current limit to p50077 * r50072[1]. Alarm A60039 is triggered at the same time.
  - The armature current setpoint limit will only be increased back to the value p50077 * r50072[1] * 180% and alarm A60039 will only disappear once the calculated temperature rise of the thyristors falls back below the permissible value and the armature current setpoint is less than the device rated current r50072[1].
- **If value = 2:**
  - Dynamic overload capability is permissible. If the calculated temperature rise of the thyristors exceeds the permissible value, the drive will be shut down with fault F60139.
### List of parameters

#### p50076[0...1] Device rated direct current reduction / Device I_rated red

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...1]</td>
<td>Sets the reduction of the device rated direct current for armature and field. The device rated direct current is reduced to the value set here to better adapt the device to the motor.</td>
<td>[0] = Armature; [1] = Field</td>
<td>- If a load class has been set in parameter p50067 which reduces the device rated direct current, the smaller of the two values will be applied. - The value set in index 0 (armature) results in a hardware-based adaption of the current actual value sensing gain. This can only be adapted in a discrete stages. As a consequence, the value set here is not precisely effective, but the next possible value. The actually effective rated device current can be seen in parameter r50072[1]. The following applies: ( r50072[1] = K \times r50072[0] ) ( K = \frac{A}{255} ) ( A = \text{p50076}[0...1] \times 255/100 ) (rounded to the next lower integer number)</td>
</tr>
</tbody>
</table>

#### p50077 Power unit I2t monitoring derating factor / PU I2t mon derat

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...1]</td>
<td>Sets the derating factor for I2t monitoring of the power unit. Derating is required in the following cases: - Operation at increased ambient temperature - Installation altitude more than 1000 m above sea level The derating factor should be taken from the following reference: SINAMICS DCM Operating Instructions - Chapter &quot;Derating&quot; and &quot;Sensor for ambient or air intake temperature&quot;</td>
<td></td>
</tr>
</tbody>
</table>

#### p50078[0...1] Supply voltage rated value / V_supp rated val

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0...1]</td>
<td>Sets the rated value of the supply voltage for armature and field. This parameter should be used to set the rated voltage value of the actual line used to supply power to the power unit.</td>
<td>[0] = Armature; [1] = Field</td>
<td>This value is the reference value for the following parameters: p50351, p50352, p50353, r52285 to r52305</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

#### p50079

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50079 Armature gating unit short pulses/long pulses / Arm sh/lg pulse</td>
<td>Sets the short pulses/long pulses on the armature gating unit.</td>
<td>0: Short pulses</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Value = 0: The gating unit emits short pulses (0.89 ms = approx. 16 degrees at 50 Hz). Value = 1: The gating unit emits long pulses (pulse duration up to approx. 0.1 ms before the next pulse) (e.g. required in the case of field infeed from the armature terminals).</td>
<td>1: Long pulses</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Notice: When field weakening is active (p50081 = 1), a valid field characteristic must be available (p50117 = 1); if not, the optimization run for field weakening (p50051 = 27) must be performed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p50080

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50080 Brake control braking mode / Brake ctr mode</td>
<td>Sets the braking mode for brake control.</td>
<td>0: No brake</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Value = 0: No brake, Value = 1: Holding brake, Value = 2: Operational brake</td>
<td>1: Holding brake</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Dependency: Refer to: p50370, p50371</td>
<td>2: Operational brake</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Note: If p50080 = 1 (holding brake): If the &quot;Enable operation&quot; command is withdrawn or the &quot;Disconnect voltage&quot; or &quot;E-stop&quot; command is set, the &quot;Close brake&quot; command will not be set until &quot;n &lt; n_min&quot; is reached. If p50080 = 2 (operational brake): If the &quot;Enable operation&quot; command is withdrawn or the &quot;Disconnect voltage&quot; or &quot;E-stop&quot; command is set, the &quot;Close brake&quot; command will be set immediately (in other words, even if the motor is still running).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### p50081

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50081 Field weakening activation / Field weak act</td>
<td>Sets the activation/de-activation of EMF-dependent field weakening.</td>
<td>0: Deactivated</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Value = 0: Deactivated, Value = 1: Activated</td>
<td>1: Activated</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Notice: When field weakening is active (p50081 = 1), a valid field characteristic must be available (p50117 = 1); if not, the optimization run for field weakening (p50051 = 27) must be performed.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50082</td>
<td>Field power unit operating mode / Field PU op mode</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: C2(1), T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Func. diagram: 6910, 8044, 8047</td>
</tr>
<tr>
<td>Min</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Max</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Factory setting</td>
<td>Unit selection: -</td>
</tr>
</tbody>
</table>

**Description:**
Sets the operating mode for the field power unit.

If p50082 = 1, 2, 3, 4, the motor flux is calculated according to the field characteristic (p50120 to p50139) as a function of the field current actual value (r52265).

**Value:**
- **0:** No field
- **1:** Field switched with line contactor
- **2:** Standstill field for >= o7.0
- **3:** Field continuously active
- **4:** Field switched with Auxiliaries ON signal
- **21:** External field power unit, otherwise as setting 1
- **22:** External field power unit, otherwise as setting 2
- **23:** External field power unit, otherwise as setting 3
- **24:** External field power unit, otherwise as setting 4

**Dependency:**
Refer to: r50073, p50076, p50258, p50265, p50612, p51838, r52265, r52268, r52290

**Notice:**
Although it is permissible for the parameter to be changed to values not equal to 0 in operating states o1.0, such changes will not be applied until operating states greater than or equal to o7.0.

**Note:**
If an external field device is used, the setpoint comes from r52268 (e.g. via an analog output or over the peer-to-peer interface).

The rated direct current of the external field device should be set in p51838. This value is also displayed in r50073[1]. p50076[2] is redundant.

If the external field device sends a field current actual value signal, this should be fed in via p50612. If the external field device is not able to send a field current actual value signal, p50263 should be set to a value of 1 or 2.

If the external field device sends an I_field < I_field_min signal, this can be fed in at injection point p50265.

If p50082 = 0:
- No field is used (e.g. in the case of permanent-magnet motors). The field firing pulses are disabled. The motor flux is set to the value for 100% rated flux.

If p50082 = 1:
- Internal field power unit. The line supplies for the field and armature sections are connected or disconnected simultaneously. The field firing pulses are enabled/disabled at the same time as the line contactor closes/opens; the field current decays with the field time constant during freewheeling.

If p50082 = 2:
- Internal field power unit. Automatic injection of standstill field set in p50257 after expiry of a period of time set in p50258 once operating state o7 or higher has been reached.

If p50082 = 3:
- Internal field power unit. The field is active continuously.

If p50082 = 4:
- Internal field power unit. The field is switched together with the Auxiliaries ON signal (p53210.2).

If p50082 = 21:
- External field device. The field is controlled in the same way as with p50082 = 1.

If p50082 = 22:
- External field device. The field is controlled in the same way as with p50082 = 2.

If p50082 = 23:
- External field device. The field is controlled in the same way as with p50082 = 3.

If p50082 = 24:
- External field device. The field is controlled in the same way as with p50082 = 4.
### 2 Parameters

#### 2.2 List of parameters

**p50083[0...n]**  
**Speed controller actual value selection / n_ctr act sel**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: C2(1), T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
</table>

**Data type:** Integer16  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Selection of the speed actual value.

**Value:**
- 0: Selection de-activated
- 1: Analog tachometer
- 2: Incr encoder
- 3: EMF actual value internal
- 4: Free interconnection using p50609
- 5: DRIVE-CLiQ encoder

**Dependency:** Refer to: p50115, p50609

**Warning:** If value = 3:
Monitoring for overspeed is only active subject to restrictions since if the EMF is used as the speed actual value with a field current actual value which is too low, very high motor speeds will be reached.

**Note:**
- If value = 3: The EMF actual value is evaluated with p50115.

**p50084**  
**Closed-loop speed control/Closed-loop current/torque control sel / n/I/tqe ctr sel**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
</table>

**Data type:** Integer16  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Sets closed-loop speed control or closed-loop current/torque control.

**Value:**
- 1: Closed-loop speed control
- 2: Closed-loop current/torque control

**Note:**
- If value = 2:
The setpoint provided by the RFG output is set as the current/torque setpoint and the speed controller is bypassed.

**p50085**  
**Sequence control withdraw jog wait time / S ctr jog t**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
</table>

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Expert list:** 1

**Description:** Sets the wait time for sequence control once the jog command has been withdrawn.

**Value:**
- Min: 0.0 [s]
- Max: 60.0 [s]
- Factory setting: 10.0 [s]

**Note:**
- Once a jog command has been withdrawn, the drive will remain in operating state o1.3 for the set wait time, with the controllers inhibited and the line contactor picked up.
- If a second jog command is sent during this time, the drive will switch to the next operating state (o1.2 or lower). However, if the time elapses without a second jog command being sent, the line contactor will drop out and the drive will switch to operating state o7.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p50086</th>
<th>Sequence control line voltage failure duration permissible / V_line_fail t perm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>10.00 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the permissible duration of a line voltage failure.  
If a line voltage failure lasts longer than this time, the corresponding fault will be triggered.  
If the line voltage failure is shorter than the set time, a restart will follow automatically.

**Dependency:**
Refer to: F60004, F60005, F60006, F60007, F60008, F60009

**Caution:**
The value in p50090 must be smaller than that in p50086 (unless for a value = 0.0) and in p50089!

<table>
<thead>
<tr>
<th>p50087</th>
<th>Brake control brake opening time / Br ctr t open</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>-10.00 [s]</td>
<td>10.00 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the brake closing time.  
When "Open brake" is sent, the firing pulse enable is delayed by this time.

**Note:**
For a negative time setting:
With "Open brake", a delay corresponding to the set time is applied in relation to the enable for the firing pulses for the thyristors. During this time, the motor works in opposition to the brake, which is still closed. This is useful, for example, in the cases of suspended loads.

For a positive time setting:
When the "Switch on", "Jog" or "Creep" command is sent with operation enabled, the firing pulses for the thyristors are not enabled until the set time has elapsed. During this time, the drive is in operating state o1.0 to give a holding brake the opportunity to open in advance.

<table>
<thead>
<tr>
<th>p50088</th>
<th>Brake control brake closing time / Br ctr t close</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>10.00 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the brake closing time.  
When "Close brake" is sent, the firing pulse inhibit is delayed by this time.

**Note:**
During this time, the drive is in operating state o1.1, o1.2, or o1.0 and is still applying torque.

<table>
<thead>
<tr>
<th>p50089</th>
<th>Sequence control voltage at power unit wait time / S ctr V at PU t</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>Max</td>
</tr>
<tr>
<td>0.01 [s]</td>
<td>60.00 [s]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the wait time for voltage and field current at the power unit.
Once the line contactor has dropped out and the "Switch on", "Jog" or "Creep" commands have been sent, in operating states o4 and o5, the drive waits for voltage at the power unit and for a field current actual value (r52265) > 50% of the field current setpoint (r52268).

If, during this time, no voltage is detected at the power unit and the field current is missing, a message is output accordingly.

Dependency:
Refer to: p50353

Caution:
The value in p50090 must be smaller than that in p50086 (unless p50086 = 0.0) and p50089!

Note:
This parameter indicates the total wait times during which the drive must pass through operating states o4 and o5 (response threshold for monitoring for the presence of voltage at the power unit, see p50353).

### p50090
**Line voltage stabilization time / V_line t_stabil**

<table>
<thead>
<tr>
<th>DC_CTRL</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>Dyn. index: -</td>
<td>Func. diagram: 6950, 6952</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.01 [s]</td>
<td>1.00 [s]</td>
<td>0.05 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the line voltage stabilization time.

**Caution:**
The value in p50090 must be smaller than that in p50086 (unless p50086 = 0.0) and p50089!

**Note:**
When the "Switch on", "Jog" or "Creep" command is sent and also after a phase failure affecting the line infeed has been detected with the "Automatic restart" function parameterized (p50086 > 0), the drive waits in operating state o4 for voltage at the power unit.

If amplitude, frequency and phase symmetry remain within the permissible tolerance for longer than this set stabilization time, line voltage is assumed to be present at the power connections.

### p50091[0...1]
**Sequence control setpoint threshold / S ctr set thresh**

<table>
<thead>
<tr>
<th>DC_CTRL</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>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2650, 2651</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>200.00 [%]</td>
<td>[0] 200.00 [%]</td>
<td>[1] 0.00 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the thresholds for "Switch on only with low setpoint" and "Automatic pulse inhibit with low setpoint".

**Index:**
[0] = Switch on only with low setpoint
[1] = Automatic pulse inhibit with low setpoint

**Dependency:**
Refer to: r52166, r52193

**Note:**
If p50091[0]:
Switching on is possible only if a setpoint [r52193] < p50091[0] is present at the RFG input.
If a higher setpoint is present, following activation, state o6 will remain set until [r52193] < p50091[0].
If p50091[1]:
If [r52193] and r52166 are smaller than p50091[1], the firing pulses will be inhibited and the motor will switch to state o2.0.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>p50092[0...3]</th>
<th>Field reversal wait times / Field rev t_wait</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.0 [s]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>10.0 [s]</td>
</tr>
</tbody>
</table>

**Description:** Sets the times to control the reversing contactor to reverse the field for a 2-quadrant device with field reversal.

**Index:**

- [0] = Field decay
- [1] = Control new field contactor
- [2] = Enable field firing pulses
- [3] = After field build up before armature enable

**Dependency:**
Refer to: p50580, p50581, p50583, r53195

**Note:**

- Re index 0:
  - Wait time for the field to decay before opening the actual field contactor.
  - When initiating an operation to reverse the field, after reaching I_Field < I_Field_min (p50394), this wait time expires before the actual field contactor is opened.

- Re index 1:
  - Wait time before controlling the new field contactor.
  - After the actual field contactor has opened, this wait time expires before the field contactor is controlled for the "new" field direction (the dropout delay time of the contactor used is generally higher than the closing delay time).

- Re index 2:
  - Wait time before enabling the field firing pulses.
  - After controlling the field contactor for the "new" field direction, this wait time expires before the field firing pulses are enabled. This time must be greater than the closing delay time of the contactor being used.

- Re index 3:
  - Wait time after the field has been re-established before the armature is enabled.
  - After the field firing pulses have been enabled, the field current actual value I_field in the "new" field direction reaches the value I_field (r52265) > I_field_set (r52268) * p50398/100%. This wait time then starts to run. After this expires, the internal (armature) "operating enable for field reversal" is issued, and the drive is no longer held in operating state o1.4.
  - After the field current has been re-established, this wait time allows the system to wait for the overshoot of the field current actual value to end and therefore the overshoot of the EMF of the DC motor before armature operation is enabled. This is intended to avoid armature overcurrents due to an excessively high EMF during an overshoot.

<table>
<thead>
<tr>
<th>p50093</th>
<th>Sequence control line contactor ON delay / Line cont t_ON</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.0 [s]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>120.0 [s]</td>
</tr>
</tbody>
</table>

**Description:**

Sets the ON delay for the line contactor.

- The switching on of the line contactor in relation to that of the auxiliaries is delayed by the time set here.
2 Parameters

2.2 List of parameters

---

**p50094**

**Sequence control auxiliaries OFF delay / Aux t_OFF**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<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>Dyn. index: -</td>
<td>Func. diagram: 2651</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 [s]</td>
<td>6500.0 [s]</td>
<td>0.0 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the OFF delay for the auxiliaries.

The switching off of the auxiliaries in relation to that of the line contactor is delayed by the time set here.

---

**p50095**

**Sequence control DC circuit contactor wait time / DC cont t_wait**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<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>Dyn. index: -</td>
<td>Func. diagram: 2651</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>1.00 [s]</td>
<td>0.00 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the wait time for a contactor in the DC circuit.

The time set in p50095 starts to elapse during a switch-on operation when operating state o5 is reached.

If this time is still running when operating state o4 is exited, then the system stays in state o3.2 until this time lapses.

**Dependency:**
Refer to: p50691

**Notice:**
If the motor is connected to the DC current output (terminal 1C1, 1D1) via a contactor, then generally, this contactor is also controlled from the relay for the line contactor (terminals 109, 110). In this case, it must be ensured that the firing pulses are only enabled after it is completely certain that the contactor has closed. To realize this, this additional wait time is required when switching on.

**Note:**
If the function "Feedback line contactor" is used, a change to 1 signal must be detected via p50691 within the time set in p50095. Otherwise, state o3.3 is adopted until it elapses and afterwards fault F60167 is triggered with fault value 6.

---

**p50096**

**Device fan run-on time / Dev fan t_run-on**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 [s]</td>
<td>3600.0 [s]</td>
<td>240.0 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the run-on time for the device fan(s).

After a pulse inhibit (reaching an operating state >= 0.9), the device fan(s) run-on until the power unit has cooled down and until the run-time has expired.

The power unit is considered to have been cooled down if all of the following conditions apply:
- All temperature sensors of the power unit indicate values less than 35 °C.
- The thermal model for the thyristors supplies a value of less than 5 %.
- The field current is less than 10 A.

**Dependency:**
Refer to: r53135
Refer to: F60167

---

**p50097**

**Field current response to faults / I_field resp to F**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6910</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 response of the field current to faults.
2 Parameters
2.2 List of parameters

Value:
0: Inhibit field pulses
1: Enable field pulses

Note:
If value = 0:
The field pulses are inhibited when a fault occurs.
If value = 1:
The field pulses are not inhibited when a fault occurs. However, it will not be possible to increase the field current setpoint any further.

**p50098** Sequence control contactor in DC circuit / Cont in DC cct

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Integer16</th>
<th>Dyn. index:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: Max

<table>
<thead>
<tr>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Setting indicating whether a contactor is used in the DC circuit.
The values for the armature voltage Ua and for the EMF (r52123, r52286, r52287, r52291, r52292, r50037, r50038) are then always set to 0% when the line contactor drops out (r53081.0 = 0). This is because in this case the motor terminals are isolated from the output terminals 1C and 1D on the SINAMICS DC MASTER, thereby preventing the sensing of the armature voltage Ua (and thus the EMF).

Value:
0: No contactor in DC circuit
1: Contactor in DC circuit

Dependency:
Refer to: r50037, r50038, r52123, r52286, r52287, r52291, r52292

**p50099** Communication monitoring delay time / Commont del

<table>
<thead>
<tr>
<th>DC_CTRL</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>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
<th>Dyn. index:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: Max

<table>
<thead>
<tr>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000 [s]</td>
<td>1000.000 [s]</td>
<td>10.000 [s]</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the delay time for monitoring the communication interfaces.
Following the switching on of the electronic supply, the monitoring mechanisms for the communication interfaces in the proximity of the drive (parallel interface and peer-to-peer interface) do not become active until the delay time set here has elapsed.

Dependency:
Refer to: r53300, r53310
Refer to: F60012, F60014

Note:
This will prevent the interface monitoring mechanisms responding in the event of the electronic power supply to the components being switched on at different times.

**p50100[0...n]** Motor rated armature current / Mot rated I_armat

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
<th>Dyn. index:</th>
<th>DDS, p0180</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>-</td>
</tr>
</tbody>
</table>

**Min**: Max

<table>
<thead>
<tr>
<th>Value</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [A]</td>
<td>20000.0 [A]</td>
<td>0.0 [A]</td>
<td></td>
</tr>
</tbody>
</table>

Description:
Sets the rated armature current as indicated on the motor's nameplate.

Note:
If p50100 = 0.0 A, the drive cannot be switched on and put into operation.
### List of parameters

#### p50101[0...n] Motor rated armature voltage / Mot rated V_armat

**DC_CTRL**

<table>
<thead>
<tr>
<th>Can be changed: C2(1), T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>10 [V]</td>
<td>2800 [V]</td>
<td>400 [V]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rated armature voltage as indicated on the motor's nameplate.

**Note:**
If a significant voltage drop is to be expected at the motor's supply line when the motor is at rated current (e.g. very long motor cable), a value increased by this voltage drop should be set at p50101.

#### p50102[0...n] Motor rated excitation current / Mot rated I_exc

**DC_CTRL**

<table>
<thead>
<tr>
<th>Can be changed: C2(1), U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6905</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0.00 [A]</td>
<td>600.00 [A]</td>
<td>0.00 [A]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the rated excitation current as indicated on the motor's nameplate.

**Note:**
If p50102 = 0.00 A, the drive cannot be switched on and put into operation.

#### p50103[0...n] Minimum motor excitation current / Mot I_exc min

**DC_CTRL**

<table>
<thead>
<tr>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6905</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0.00 [A]</td>
<td>600.00 [A]</td>
<td>0.00 [A]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the minimum excitation current for the motor.

#### p50104[0...n] Speed-dependent current limitation speed n1 / I_lim n_dep n1

**DC_CTRL**

<table>
<thead>
<tr>
<th>Can be changed: C2(1), U, T</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 8040</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>1 [1 rpm]</td>
<td>10000 [1 rpm]</td>
<td>5000 [1 rpm]</td>
</tr>
</tbody>
</table>

**Description:**
Sets speed n1 according to the motor's nameplate for "speed-dependent current limitation".

The characteristic for "speed-dependent current limitation" is defined by 2 pairs of values (p50104/p50105, p50106/p50107).

This parameter sets speed n1 for the first pair of values (p50104/p50105).

**Dependency:**
Refer to: p50105, p50106, p50107, p50108, p50109

**Note:**
The following condition applies:

p50104 <= p50106 (n1 <= n2)
### 2.2 List of parameters

#### p50105[0...n]
**Speed-dependent current limitation armature current I1 / I\_lim n\_dep I1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Sets armature current I1 according to the motor's nameplate for &quot;speed-dependent current limitation&quot;. The characteristic for &quot;speed-dependent current limitation&quot; is defined by 2 pairs of values (p50104/p50105, p50106/p50107). This parameter sets armature current I1 for the first pair of values (p50104/p50105).</td>
</tr>
<tr>
<td><strong>Can be changed:</strong></td>
<td>C2(1), U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
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</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>0.1 [A]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>20000.0 [A]</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
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</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
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</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
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</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Func. diagram:</strong></td>
<td>8040</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
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<tr>
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<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
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</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
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<td><strong>Unit selection:</strong></td>
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<td><strong>Expert list:</strong></td>
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<td><strong>Unit selection:</strong></td>
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<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
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</tr>
<tr>
<td><strong>P-Group:</strong></td>
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</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0.1 [A]</td>
</tr>
</tbody>
</table>

#### p50106[0...n]
**Speed-dependent current limitation speed n2 / I\_lim n\_dep n2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Sets speed n2 according to the motor's nameplate for &quot;speed-dependent current limitation&quot;. The characteristic for &quot;speed-dependent current limitation&quot; is defined by 2 pairs of values (p50104/p50105, p50106/p50107). This parameter sets speed n2 for the second pair of values (p50106/p50107).</td>
</tr>
<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>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>1 [1 rpm]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>10000 [1 rpm]</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Func. diagram:</strong></td>
<td>8040</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
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</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
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<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
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</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
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</tr>
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<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>5000 [1 rpm]</td>
</tr>
</tbody>
</table>

#### p50107[0...n]
**Speed-dependent current limitation armature current I2 / I\_lim n\_dep I2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Sets armature current I2 according to the motor's nameplate for &quot;speed-dependent current limitation&quot;. The characteristic for &quot;speed-dependent current limitation&quot; is defined by 2 pairs of values (p50104/p50105, p50106/p50107). This parameter sets armature current I2 for the second pair of values (p50106/p50107).</td>
</tr>
<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>-</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>0.1 [A]</td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>20000.0 [A]</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
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<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Func. diagram:</strong></td>
<td>8040</td>
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<tr>
<td><strong>Scaling:</strong></td>
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<tr>
<td><strong>Access level:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Dyn. index:</strong></td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>Unit group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Unit selection:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Expert list:</strong></td>
<td>1</td>
</tr>
<tr>
<td><strong>Factory setting:</strong></td>
<td>0.1 [A]</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**p50108[0...n]**  
**Speed-dependent current limitation maximum operating speed n3 / I\_lim n\_dep n3**  
**DC_CTRL**  
Can be changed: C2(1), U, T  
Data type: FloatingPoint32  
P-Group: -  
Not for motor type: -  
Min: 1 [rpm]  
Max: 10000 [1 rpm]  
Factory setting: 5000 [1 rpm]  
Access level: 1  
Dependancy: Refer to: p50104, p50105, p50106, p50107, p50109  
Note: In this parameter, the following maximum speed must be set dependent upon the setting of the signal source for the speed actual value (p50083):  
- p50083 = 1 (analog tachometer): Speed prevailing at a tachometer voltage according to p50741  
- p50083 = 2 (incremental encoder TTL/HTL): Same value as maximum speed according to p50143  
- p50083 = 3 (operation without tachometer): Speed prevailing at an EMF according to p50115.

**p50109[0...n]**  
**Speed-dependent current limitation activation / I\_lim n\_dep act**  
**DC_CTRL**  
Can be changed: C2(1), U, T  
Data type: Integer16  
P-Group: -  
Not for motor type: -  
Min: 0  
Max: 1  
Factory setting: 0  
Access level: 1  
Dependancy: -  
Note: Sets activation/de-activation of the "speed-dependent current limitation" function.

**p50110[0...n]**  
**Armature circuit resistance / Ra**  
**DC_CTRL**  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: -  
Not for motor type: -  
Min: 0.000 [ohm]  
Max: 400.000 [ohm]  
Factory setting: 0.000 [ohm]  
Access level: 3  
Dependancy: -  
Note: The parameter is set automatically during the optimization run for pre-control and the current controller for the armature converter (p50051 = 25).

**p50111[0...n]**  
**Armature circuit inductance / La**  
**DC_CTRL**  
Can be changed: U, T  
Data type: FloatingPoint32  
P-Group: -  
Not for motor type: -  
Min: 0.000 [mH]  
Max: 10000.000 [mH]  
Factory setting: 0.000 [mH]  
Access level: 3  
Dependancy: -  
Note: The parameter is set automatically during the optimization run for pre-control and the current controller for the armature converter (p50051 = 25).
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Field circuit resistance / R_field circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50112[0...n]</strong></td>
<td><strong>Can be changed:</strong> U, T <strong>Calculated:</strong> - <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Data type:</strong> FloatingPoint32 <strong>Dyn. index:</strong> DDS, p0180 <strong>Func. diagram:</strong> 6910</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0.000 [ohm]</td>
<td>4000.000 [ohm] 0.000 [ohm]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the field circuit resistance.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The parameter is set automatically during the optimization run for closed-loop field current control (p50051 = 24).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Motor I2t monitoring continuous current factor / Mot I2t I_cont</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50113[0...n]</strong></td>
<td><strong>Can be changed:</strong> U, T <strong>Calculated:</strong> - <strong>Access level:</strong> 2</td>
</tr>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Data type:</strong> FloatingPoint32 <strong>Dyn. index:</strong> DDS, p0180 <strong>Func. diagram:</strong> 8038</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0.50</td>
<td>2.00 1.00</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the permissible continuous armature current for motor I2t monitoring.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>At this permissible continuous current, fault F60037 is not output. The current is calculated as follows: p50113 * p50100.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Motor thermal time constant / Mot T therm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50114[0...n]</strong></td>
<td><strong>Can be changed:</strong> C2(1), U, T <strong>Calculated:</strong> - <strong>Access level:</strong> 1</td>
</tr>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Data type:</strong> FloatingPoint32 <strong>Dyn. index:</strong> DDS, p0180 <strong>Func. diagram:</strong> 8038</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0 [s]</td>
<td>10000 [s] 600 [s]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the thermal time constant of the motor.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Value = 0: The motor’s I2t monitoring is de-activated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Speed controller EMF at maximum speed / EMF at n_max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50115[0...n]</strong></td>
<td><strong>Can be changed:</strong> C2(1), U, T <strong>Calculated:</strong> - <strong>Access level:</strong> 1</td>
</tr>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Data type:</strong> FloatingPoint32 <strong>Dyn. index:</strong> DDS, p0180 <strong>Func. diagram:</strong> 6810</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit group:</strong> - <strong>Unit selection:</strong> -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td><strong>Scaling:</strong> PERCENT <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>1.00 [%]</td>
<td>140.00 [%] 100.00 [%]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Setting the percentage value in relation to p50078[0] for specifying the EMF at maximum speed. The speed is adjusted using the EMF as the speed actual value.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Field circuit inductance / L_field circuit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50116[0...n]</strong></td>
<td><strong>Can be changed:</strong> U, T <strong>Calculated:</strong> - <strong>Access level:</strong> 3</td>
</tr>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Data type:</strong> FloatingPoint32 <strong>Dyn. index:</strong> DDS, p0180 <strong>Func. diagram:</strong> 6910</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit 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>0.0 [mH]</td>
<td>1000000.0 [mH] 0.0 [mH]</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the field circuit inductance.</td>
</tr>
<tr>
<td><strong>Dependency:</strong></td>
<td>Refer to: p51597</td>
</tr>
</tbody>
</table>
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50117[0...n]</td>
<td>Field characteristic status / Field char stat</td>
<td></td>
<td>The parameter is set automatically during the optimization run for pre-control and the current controller for the field converter (p50051 = 24).</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: -</td>
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</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td>DC_CTRL</td>
<td>Status of the field characteristic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value:</td>
<td>0: Field characteristic not recorded</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1: Field characteristic recorded</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The parameter is set automatically during the optimization run for field weakening (p50051 = 27). If p50117 = 1, the field characteristic is valid (p50118 to p50139).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50118[0...n]</td>
<td>EMF rated value / EMF rated</td>
<td></td>
<td>Only the ratio of p50118 to p50119 is decisive for field weakening control.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0 [%]</td>
<td>200 [%]</td>
<td>63 [%]</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Sets the EMF generated at full field (corresponding to p50102) and a speed according to p50119.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). If p50102 is modified subsequently or the maximum speed is altered downstream, the optimization run for field weakening has to be repeated. If p50100, p50101 or p50110 is modified subsequently, the optimization run for field weakening does not have to be repeated.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50119[0...n]</td>
<td>Rated speed / n_rated</td>
<td></td>
<td>Only the ratio of p50118 to p50119 is decisive for field weakening control.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900</td>
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</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</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>
<tr>
<td>DC_CTRL</td>
<td>Sets the speed generated at full field (corresponding to p50102) and an EMF actual value according to p50118.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency:</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only the ratio of p50118 to p50119 is decisive for field weakening control. If p50102 is modified subsequently or the maximum speed is altered downstream, the optimization run for field weakening has to be repeated. If p50100, p50101 or p50110 is modified subsequently, the optimization run for field weakening does not have to be repeated.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## List of parameters

### p50120[0...n] Field current for motor flux 0 % / I_field flux 0%

<table>
<thead>
<tr>
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<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
</tr>
<tr>
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<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</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>0.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 0 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values less than p50121 can be set.

### p50121[0...n] Field current for motor flux 5 % / I_field flux 5%

<table>
<thead>
<tr>
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<th>Access level: 3</th>
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</thead>
<tbody>
<tr>
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<td>Func. diagram: 6900, 6910</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</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>3.7 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 5 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50120 and less than p50122 can be set.

### p50122[0...n] Field current for motor flux 10 % / I_field flux 10%

<table>
<thead>
<tr>
<th>DC_CTRL</th>
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<th>Access level: 3</th>
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</thead>
<tbody>
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<td>Func. diagram: 6900, 6910</td>
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<tr>
<td>P-Group:</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</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>7.3 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 10 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50121 and less than p50123 can be set.

### p50123[0...n] Field current for motor flux 15 % / I_field flux 15%

<table>
<thead>
<tr>
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<th>Access level: 3</th>
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</thead>
<tbody>
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<td>Func. diagram: 6900, 6910</td>
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<td>P-Group:</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</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>11.0 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 15 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50122 and less than p50124 can be set.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Field current for motor flux</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50124[0...n]</td>
<td>Field current for motor flux 20% / I_field flux 20%</td>
<td>Setting of the field current for a motor flux of 20%.</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50123 and less than p50125 can be set.</td>
</tr>
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<td>Func. diagram: 6900, 6910</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</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>0.0 [%]</td>
<td>100.0 [%]</td>
<td>14.7 [%]</td>
</tr>
<tr>
<td>p50125[0...n]</td>
<td>Field current for motor flux 25% / I_field flux 25%</td>
<td>Setting of the field current for a motor flux of 25%.</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50124 and less than p50126 can be set.</td>
</tr>
<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</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>0.0 [%]</td>
<td>100.0 [%]</td>
<td>18.4 [%]</td>
</tr>
<tr>
<td>p50126[0...n]</td>
<td>Field current for motor flux 30% / I_field flux 30%</td>
<td>Setting of the field current for a motor flux of 30%.</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50125 and less than p50126 can be set.</td>
</tr>
<tr>
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<td>Calculated: -</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
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<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
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<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>22.0 [%]</td>
</tr>
<tr>
<td>p50127[0...n]</td>
<td>Field current for motor flux 35% / I_field flux 35%</td>
<td>Setting of the field current for a motor flux of 35%.</td>
<td>This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50126 and less than p50128 can be set.</td>
</tr>
<tr>
<td>DC_CTRL</td>
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<td>Calculated: -</td>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
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<tr>
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<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>25.7 [%]</td>
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### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50128[0...n]</td>
<td>Field current for motor flux 40 % / I_field flux 40%</td>
<td>Setting of the field current for a motor flux of 40 %. This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50127 and less than p50129 can be set.</td>
</tr>
<tr>
<td>p50129[0...n]</td>
<td>Field current for motor flux 45 % / I_field flux 45%</td>
<td>Setting of the field current for a motor flux of 45 %. This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50128 and less than p50130 can be set.</td>
</tr>
<tr>
<td>p50130[0...n]</td>
<td>Field current for motor flux 50 % / I_field flux 50%</td>
<td>Setting of the field current for a motor flux of 50 %. This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50129 and less than p50131 can be set.</td>
</tr>
<tr>
<td>p50131[0...n]</td>
<td>Field current for motor flux 55 % / I_field flux 55%</td>
<td>Setting of the field current for a motor flux of 55 %. This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50130 and less than p50132 can be set.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**p50132[0...n]**  
Field current for motor flux 60 % / I\_field flux 60%

<table>
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<th>Access level: 3</th>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</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>0.0 [%]</td>
<td>100.0 [%]</td>
<td>44.6 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 60 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50131 and less than p50133 can be set.

**p50133[0...n]**  
Field current for motor flux 65 % / I\_field flux 65%

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tr>
<td>Data type: FloatingPoint32</td>
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<td>Func. diagram: 6900, 6910</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>48.9 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 65 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50132 and less than p50134 can be set.

**p50134[0...n]**  
Field current for motor flux 70 % / I\_field flux 70%

<table>
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<tr>
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<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
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<td>Func. diagram: 6900, 6910</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
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<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>53.6 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting of the field current for a motor flux of 70 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50133 and less than p50135 can be set.

**p50135[0...n]**  
Field current for motor flux 75 % / I\_field flux 75%

<table>
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<tr>
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<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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<tbody>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>58.9 [%]</td>
<td></td>
</tr>
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</table>

**Description:** Setting of the field current for a motor flux of 75 %.

**Note:** This parameter is set automatically during the optimization run for field weakening (p50051 = 27). Only values greater than p50134 and less than p50136 can be set.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50136[n]</td>
<td>Field current for motor flux 80% / ( I_{field \ flux \ 80%} )</td>
<td>Setting of the field current for a motor flux of 80%. This parameter is set automatically during the optimization run for field weakening ( (p50051 = 27) ). Only values greater than p50135 and less than p50137 can be set.</td>
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</table>

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 3</th>
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</thead>
<tbody>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>64.9 [%]</td>
</tr>
</tbody>
</table>

| p50137[n] | Field current for motor flux 85% / \( I_{field \ flux \ 85\%} \) | Setting of the field current for a motor flux of 85%. This parameter is set automatically during the optimization run for field weakening \( (p50051 = 27) \). Only values greater than p50136 and less than p50138 can be set. |

<table>
<thead>
<tr>
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<td>P-Group:</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>0.0 [%]</td>
<td>100.0 [%]</td>
<td>71.8 [%]</td>
</tr>
</tbody>
</table>

| p50138[n] | Field current for motor flux 90% / \( I_{field \ flux \ 90\%} \) | Setting of the field current for a motor flux of 90%. This parameter is set automatically during the optimization run for field weakening \( (p50051 = 27) \). Only values greater than p50137 and less than p50139 can be set. |

<table>
<thead>
<tr>
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<td>Func. diagram: 6900, 6910</td>
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<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
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<td>100.0 [%]</td>
<td>79.8 [%]</td>
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</tbody>
</table>

| p50139[n] | Field current for motor flux 95% / \( I_{field \ flux \ 95\%} \) | Setting of the field current for a motor flux of 95%. This parameter is set automatically during the optimization run for field weakening \( (p50051 = 27) \). Only values greater than p50138 can be set. |

<table>
<thead>
<tr>
<th>DC_CTRL</th>
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<th>Calculated: -</th>
<th>Access level: 3</th>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6900, 6910</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
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<td>100.0 [%]</td>
<td>89.1 [%]</td>
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2 Parameters

2.2 List of parameters

**p50140**  
Motor I2t monitoring starting behavior / Mot I2t strt behav  
- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 2
- **Max:** 12
- **Value:**  
  - 2: Start I2t with zero
  - 12: Start I2t with saved value

**Description:**
Sets the starting behavior for I2t monitoring of the motor.

**Value:**
- 2: Start I2t with zero
- 12: Start I2t with saved value

**Note:**
If value = 12:
For motor I2t monitoring, when switching off, the model temperature is saved in a non-volatile fashion. When switching on, the saved value is taken into account in the model calculation. As a consequence, the UL508C specification is fulfilled.

**p50148[0...n]**  
Armature converter Alpha W limit (single-phase operation) / A Alpha W lim 1-ph  
- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 120.0 [°]
- **Max:** 180.0 [°]

**Description:**
Sets the inverter stability limit for the firing angle of the armature converter in single-phase operation.

**Dependency:**
Refer to: r53190

**Note:**
The status of the Alpha W limit is shown in r53190.8.

**p50149[0...n]**  
Armature converter correction angle Alpha W limit / Arm corr Alpha W  
- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -60.0 [°]
- **Max:** 0.0 [°]

**Description:**
Setting of the correction angle for current-dependent offset of the Alpha W limit.

**p50150[0...n]**  
Armature converter Alpha G limit / Arm Alpha G lim  
- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0.0 [°]
- **Max:** 165.0 [°]

**Description:**
Sets the rectifier stability limit for the firing angle of the armature converter.

**Dependency:**
Refer to: r53190

**Note:**
The status of the Alpha G limit is shown in r53190.7.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50151[0...n]</strong></td>
<td>Armature converter Alpha W limit / Arm Alpha W lim</td>
<td>Can be changed: U, T</td>
<td>Access level: 3</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
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<td>Not for motor type:</td>
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<td>Unit group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Scaling: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>120.0 [°]</td>
<td>Max</td>
<td>Max</td>
<td>Max</td>
</tr>
<tr>
<td>165.0 [°]</td>
<td>150.0 [°]</td>
<td>150.0 [°]</td>
<td>150.0 [°]</td>
</tr>
<tr>
<td><strong>p50152[0...n]</strong></td>
<td>Armature average number of line periods / Arm line per no.</td>
<td>Can be changed: T</td>
<td>Access level: 3</td>
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<td>Unit group: -</td>
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<tr>
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<td>Scaling: -</td>
<td>Min</td>
<td>Scaling: -</td>
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<td>1</td>
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<td>20</td>
<td>20</td>
<td>20</td>
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<tr>
<td><strong>p50153[0...n]</strong></td>
<td>Control word for armature pre-control / A prec STW</td>
<td>Can be changed: T</td>
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<td>Unit group: -</td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
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<td>Min</td>
<td>Scaling: -</td>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0</td>
<td>Max</td>
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<td>Max</td>
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<td>Factory setting</td>
<td>1</td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>p50154[0...n]</strong></td>
<td>Closed-loop armature current control integral comp activation / ia ctr I comp act</td>
<td>Can be changed: T</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>Calculated: -</td>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>Unit group: -</td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0</td>
<td>Max</td>
<td>1</td>
<td>Max</td>
</tr>
<tr>
<td>1</td>
<td>Factory setting</td>
<td>1</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
- **Sets the inverter stability limit for the firing angle of the armature converter.**
- **Dependency:** Refer to: r53190
- **Note:** The status of the Alpha W limit is shown in r53190.8.

**Description:**
- **Setting of the number of line periods for line frequency correction in the armature circuit.**
- **Note:**
  - The internal line synchronization for the armature firing pulses derived from the power terminals (line infeed) is averaged over the number of line periods set in this parameter.
  - In the case of operation on "weak" power supplies with unstable frequencies (on a diesel-driven generator, for example (isolated operation), this parameter must be set lower than for operation on "constant V/Hz" systems to achieve a higher frequency correction speed.

**Description:**
- **Sets the control word for armature pre-control.**
- **Value:**
  - 0: Armature pre-control disabled and pre-control = 165 °
  - 1: Armature pre-control active
  - 2: Armature pre-control active EMF only with torque direction chge
  - 3: Armature pre-control active EMF irrelevant
- **Note:**
  - If value = 3:
    - For pre-control, in this case the EMF is applied with a value of 0 (recommended setting in the case of supplying high inductances from armature terminals, e.g. solenoids, field supply).

**Description:**
- **Sets activation/de-activation of the integral component on the armature current controller.**
- **Value:**
  - 0: Deactivated
  - 1: Activated
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50155[0...n]</strong></td>
<td>Closed-loop armature current control P gain / ia ctr Kp</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
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<td>Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Calculated: -</td>
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</tr>
<tr>
<td>P-Group:</td>
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<td>Access level: 2</td>
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<tr>
<td>Not for motor type:</td>
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</tr>
<tr>
<td>Min</td>
<td>0.01</td>
<td>200.00</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td><strong>p50156[0...n]</strong></td>
<td>Closed-loop armature current control integral time / ia ctr Tn</td>
<td>Calculated: -</td>
</tr>
<tr>
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<td>DC_CTRL</td>
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</tr>
<tr>
<td></td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
<td>P-Group:</td>
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</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Min</td>
<td>0.001 [s]</td>
<td>1.000 [s]</td>
<td>0.200 [s]</td>
</tr>
<tr>
<td></td>
<td><strong>p50157[0...n]</strong></td>
<td>Current limitation setpoint integrator selection / I_set integ sel</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
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<tr>
<td>Data type:</td>
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<td>Access level: 2</td>
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<td>P-Group:</td>
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<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type:</td>
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</tr>
<tr>
<td>Min</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Note:**

- If value = 0:
  - The integral component of the armature current controller is kept constantly at zero (i.e. the armature current controller functions solely as a proportional controller).

**Description:**

- Sets the P gain of the armature current controller.

**Dependency:**

- Refer to: p50175

**Note:**

- The parameter is set automatically during the optimization run for pre-control and the current controller for the armature converter (p50051 = 25).
- The P gain (Kp) for the armature current controller is calculated as follows:
  
  \[ Kp = p50155 \times |p50175| \]

**Description:**

- Sets the integral time of the armature current controller.

**Dependency:**

- Refer to: p50176

**Note:**

- The parameter is set automatically during the optimization run for pre-control and the current controller for the armature converter (p50051 = 25).
- The integral time (Tn) for the armature current controller is calculated as follows:

  \[ Tn = p50156 \times |p50176| \]

**Description:**

- Selection of the current setpoint integrator.

**Value:**

- 0: Reduced gearbox stressing
- 1: Current setpoint integrator

**Note:**

- If value = 0:
  - The integrator is only effective after a change in torque direction (only functions as a ramp-function generator for the current setpoint until the first time the output reaches the setpoint at the integrator input after a change in torque direction).

- If value = 1:
  - The integrator is always effective (functions as a ramp-function generator for the current setpoint).
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Notice</th>
<th>Possible effect if this is not observed</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50158[0...n]</td>
<td>Current limitation setpoint integrator ramp-up time / Set integ t_r-up</td>
<td>Sets the ramp-up time for the setpoint integrator during current limitation.</td>
<td>Torque direction change will not be able to be completed. The drive remains in one torque direction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When setting a ramp-up time &gt; 0.000 s, it is not permissible to enter a supplementary current setpoint via p50601[5]. p50601[5] must be set = 0.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible effect if this is not observed:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Torque direction change will not be able to be completed. The drive remains in one torque direction.</td>
<td></td>
</tr>
<tr>
<td>p50159[0...n]</td>
<td>Auto-reversing stage changeover threshold / Auto-rev thresh</td>
<td>Sets the changeover threshold for the torque direction in the auto-reversing stage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>When setting a ramp-up time &gt; 0.000 s, it is not permissible to enter a supplementary current setpoint via p50601[5]. p50601[5] must be set = 0.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible effect if this is not observed:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Torque direction change will not be able to be completed. The drive remains in one torque direction.</td>
<td></td>
</tr>
<tr>
<td>p50160[0...n]</td>
<td>Auto-reversing stage additional torque-free interval / Auto-rev interval</td>
<td>Sets the additional torque-free interval when switching over the torque direction in the auto-reversing stage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>When setting a ramp-up time &gt; 0.000 s, it is not permissible to enter a supplementary current setpoint via p50601[5]. p50601[5] must be set = 0.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possible effect if this is not observed:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Torque direction change will not be able to be completed. The drive remains in one torque direction.</td>
<td></td>
</tr>
<tr>
<td>p50161[0...n]</td>
<td>Auto-reversing stage Alpha W pulses second pulse inhibited / Auto-rev Alpha W1</td>
<td>Sets the additional Alpha W pulses with inhibited second pulse in the auto-reversing stage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter should be set to values &gt; 0 in particular when supplying high inductances (e.g. infeed of solenoids).</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: p50179</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of additional Alpha W pulses with disabled second pulse following detection of I = 0 signal prior to a change in torque direction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>These pulses cause the current to decay prior to a change in torque direction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>When it drops below the thyristor holding current value, the current is suddenly chopped by the unfired second thyristor and the residual energy stored in the load inductance must be dissipated via a protective circuit (e.g. a varistor) to prevent the load inductance from producing an overvoltage.</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50162[0...n]</strong></td>
<td>EMF selection / EMF sel</td>
<td>Can be changed: T</td>
<td>Data type: Integer16</td>
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<td></td>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Min</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Measured EMF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>EMF with Ua from p50193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>EMF with EMF from p50193</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>EMF with EMF from r52167</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the calculation method for the EMF in armature pre-control.

**Value:**
- 1: Measured EMF
- 2: EMF with Ua from p50193
- 3: EMF with EMF from p50193
- 4: EMF with EMF from r52167

**Note:**
- If p50162 = 1: The EMF derived from the measured armature voltage (r52123) is used.
- If p50162 = 2: The EMF for armature current pre-control is calculated from the armature voltage selected with p50193 (the resistive + inductive armature voltage drop is subtracted internally).
- If p50162 = 3: The parameter selected with p50193 is used as the EMF for armature current pre-control. This setting also allows a closed-loop DC link voltage control to be implemented.
- If p50162 = 4: The EMF for the armature precontrol (12-pulse in parallel) is calculated as follows:

\[ r52290 \times \left( \frac{r52167}{p50119} \right) \times p50118 \]

<table>
<thead>
<tr>
<th><strong>p50163[0...n]</strong></th>
<th>EMF smoothing selection / EMF smoothing sel</th>
<th>Can be changed: T</th>
<th>Data type: Integer16</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6852</td>
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<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td></td>
<td></td>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
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<td>160</td>
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<td>1</td>
<td>Averaging over last 1 EMF values</td>
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<tr>
<td>4</td>
<td>Averaging over last 4 EMF values</td>
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<td>Averaging over last 6 EMF values</td>
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<td>PT1 time constant = 10 ms</td>
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<td></td>
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</tr>
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<tr>
<td>160</td>
<td>PT1 time constant = 160 ms</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the method for filtering the EMF for armature pre-control.

**Value:**
- 0: No filtering
- 1 - 160: Various filtering options

<table>
<thead>
<tr>
<th><strong>p50164[0...n]</strong></th>
<th>Closed-loop armature current ctr proportional comp activation / Ia ctr Kp act</th>
<th>Can be changed: T</th>
<th>Data type: Integer16</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>P-Group: -</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6855</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td>Factory setting</td>
<td></td>
</tr>
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<td>0</td>
<td>Deactivated</td>
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<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Activated</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

Note:
If value = 0:
The proportional component of the armature current controller is kept constantly at zero (i.e. the armature current controller functions solely as an integral controller).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50165[n]</td>
<td>BI: Signal source for change in torque direction enable / Torq dir sig s</td>
<td>Can be changed: T</td>
<td>If p50169 = 1 or p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculated: -</td>
<td>A valid field characteristic (p50117 = 1) is required, otherwise fault F80055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27). Parameter p50263 defines the input variable for determining the motor flux.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access level: 2</td>
<td>If p50169 = 1 and p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td>This is an invalid setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dyn. index: CDS, p0170</td>
<td>If p50170 = 1, it will not be possible to set p50169 = 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Refer to: p50051, p50117, p50263</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source to enable a torque direction in the event of a change in torque direction.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 signal:</td>
<td>Enable available for M0 or MI.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 signal:</td>
<td>Enable available for M0 or MII.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: De-activating</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Activating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The calculation of the thyristor blocking voltage can only be activated if the hardware (Power Interface Module) supports this function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter is only evaluated once while powering up, i.e. a change only becomes effective after a new start or after powering up with saved parameters (p0976 = 11).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50166</td>
<td>Thyristor blocking voltage calculation activation / Thy_block_calc act</td>
<td>Can be changed: T</td>
<td>If p50169 = 1 or p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculated: -</td>
<td>A valid field characteristic (p50117 = 1) is required, otherwise fault F80055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27). Parameter p50263 defines the input variable for determining the motor flux.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access level: 3</td>
<td>If p50169 = 1 and p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>This is an invalid setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dyn. index: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>If p50170 = 1, it will not be possible to set p50169 = 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit group: -</td>
<td>Refer to: p50051, p50117, p50263</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Setting to activate/de-activate the calculation of the thyristor blocking voltage.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: De-activating</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Activating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The calculation of the thyristor blocking voltage can only be activated if the hardware (Power Interface Module) supports this function.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This parameter is only evaluated once while powering up, i.e. a change only becomes effective after a new start or after powering up with saved parameters (p0976 = 11).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50169[n]</td>
<td>Torque limiting selection torque limiting/current limitation / T lim sel T/I_lim</td>
<td>Can be changed: T</td>
<td>If p50169 = 1 or p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Calculated: -</td>
<td>A valid field characteristic (p50117 = 1) is required, otherwise fault F80055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27). Parameter p50263 defines the input variable for determining the motor flux.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Access level: 2</td>
<td>If p50169 = 1 and p50170 = 1:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
<td>This is an invalid setting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dyn. index: DDS, p0180</td>
<td>If p50170 = 1, it will not be possible to set p50169 = 1.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Refer to: p50051, p50117, p50263</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Max</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Setting to select torque limiting or current limitation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: Current lim</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Torque limiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>A valid field characteristic (p50117 = 1) is required, otherwise fault F80055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27). Parameter p50263 defines the input variable for determining the motor flux.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This is an invalid setting.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If p50170 = 1, it will not be possible to set p50169 = 1.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Refer to: p50051, p50117, p50263</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Note:**
If p50169 = 0:
Current limitation.
If p50169 = 1:
Torque limiting; in other words, the pre-set torque limit is converted into a current limit:
current limit = torque limit/motor flux

<table>
<thead>
<tr>
<th>p50170[0...n]</th>
<th>Selection of control type for closed-loop current/torque control / Ctrl type I/tq sel</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>DDS, p018</td>
</tr>
<tr>
<td>Unit 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>1</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the controller's control type (closed-loop current control or closed-loop torque control).
p50170 = 0:
The controller is current-controlled.
p50170 = 1:
The controller is torque-controlled; in other words, the torque setpoint is converted into a current setpoint (current setpoint = torque setpoint/motor flux).

**Value:**
0: CI-loop I_ctrl
1: Closed-loop torque control

**Dependency:**
If p50169 or p50170 is set to a value of 1, there must be a valid field characteristic (p50117 = 1); otherwise fault F60055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27).
Parameter p50263 defines the input variable for determining the motor flux.
If p50169 = 1 and p50170 = 1:
This is an invalid setting. If p50169 = 1, it will not be possible to set p50170 = 1.
Refer to: p50051, p50117, p50173, p50263

**Note:**
The following parameters are used to change over between current control and torque control:
- Signal source via connector input p50173
or
- Fixed set value in p50170

<table>
<thead>
<tr>
<th>p50171[0...n]</th>
<th>Current limitation armature current limit torque dir I factor / la lim t d I fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C2(1), U, T</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>DDS, p018</td>
</tr>
<tr>
<td>Unit 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>0.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>300.0 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the factor for the armature current limit in torque direction I.

<table>
<thead>
<tr>
<th>p50172[0...n]</th>
<th>Current limitation armature current limit torque dir II factor / la lim t d II fact</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>C2(1), U, T</td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>DDS, p018</td>
</tr>
<tr>
<td>Unit 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>-300.0 [%]</td>
</tr>
<tr>
<td>Max</td>
<td>0.0 [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-100.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the factor for the armature current limit in torque direction II.
2 Parameters
2.2 List of parameters

**p50173[0...n]**

<table>
<thead>
<tr>
<th><strong>BI</strong></th>
<th>Signal source for closed-loop current/torque control ctr type / Ctr I/tq ctr sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td></td>
</tr>
<tr>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>Access level: 2</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
</tr>
<tr>
<td>Unit 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: 1</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>
<tr>
<td>-</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for changeover between closed-loop current control and closed-loop torque control.

- p50170 = 0 and p50173 = 0 signal:
The controller is current-controlled.
- p50170 = 1 or p50173 = 1 signal:
The controller is torque-controlled; in other words, the torque setpoint is converted into a current setpoint (current setpoint = torque setpoint/motor flux).

**Dependency:**
If p50169 or p50170 is set to a value of 1, there must be a valid field characteristic (p50117 = 1); otherwise fault F60055 will be output on power-up. If this setting is selected, the optimization run for field weakening must be performed in advance (p50051 = 27).

Parameter p50263 defines the input variable for determining the motor flux.
Refer to: p50170

**Note:**
The following parameters are used to change over between current control and torque control:
- Signal source via connector input p50173
- Fixed set value in p50170

**p50174**

<table>
<thead>
<tr>
<th><strong>Torque limiting for OFF1 &amp; OFF3 / T_lim OFF1 &amp; OFF3</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Calculated: -</td>
</tr>
<tr>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Func. diagram: 6840</td>
</tr>
<tr>
<td>P-Group: -</td>
</tr>
<tr>
<td>Unit group: -</td>
</tr>
<tr>
<td>Unit selection: -</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>Max</td>
</tr>
<tr>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**
Value = 0 --> torque limiting is not bypassed for OFF1 & OFF3
Value = 1 --> torque limiting bypass active for OFF1 & OFF3
Factory setting = 1 (for compatibility reasons)

**Value:**
- 0: Torque limiting for OFF1 & OFF3 active
- 1: Torque limiting for OFF1 & OFF3 not active

**Dependency:**
Refer to: r52133, r52147

**p50175[0...n]**

<table>
<thead>
<tr>
<th><strong>CI</strong></th>
<th>Signal source for closed-loop armature current control P gain / la ctr Kp sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td></td>
</tr>
<tr>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>Dyn. index: CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
</tr>
<tr>
<td>Unit group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Scaling: PERCENT</td>
<td></td>
</tr>
<tr>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
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<tr>
<td>-</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for variable control of the armature current controller's P gain.

**Dependency:**
Refer to: p50155

**Note:**
The P gain (Kp) for the armature current controller is calculated as follows:
Kp = p50155 x [p50175]
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50176[0...n] CI</td>
<td>Signal source for closed-loop armature current control integral time / Ia ctrl Tn sig s</td>
<td>Sets the signal source for variable control of the armature current controller's integral time. The integral time (Tn) for the armature current controller is calculated as follows: ( Tn = p50156 \times</td>
</tr>
<tr>
<td>p50177[0...n] BI</td>
<td>Signal source for the &quot;No immediate pulse inhibit&quot; command / No pulse inh sig s</td>
<td>Sets the signal source for the &quot;No immediate pulse inhibit&quot; command. A low signal will cause the armature firing pulses to be inhibited immediately without waiting for the I = 0 signal or sending Alpha W pulses for current decay. The additional Alpha W pulses (as set in p50161 and p50179) are not output either. As long as this command is pending, it will not be possible to switch to an operating state lower than o1.6.</td>
</tr>
<tr>
<td>p50178[0...n] BI</td>
<td>Signal source for the &quot;Fire all thyristors simultaneously&quot; command / All thy fire sig s</td>
<td>Sets the signal source for the &quot;Fire all thyristors simultaneously&quot; command. The default setting of this command (high signal) causes all 6 thyristors on thyristor bridge I to be fired continuously and simultaneously. Changeover to long pulses is automatic.</td>
</tr>
<tr>
<td>p50179[0...n] BI</td>
<td>Auto-reversing stage Alpha W pulses second pulse enabled / Auto-rev Alpha W2</td>
<td>Sets the additional Alpha W pulses with enabled second pulse in the auto-reversing stage. This parameter should be set to values &gt; 0 in particular when supplying high inductances (e.g. infeed of solenoids). Number of additional Alpha W pulses with enabled second pulse following detection of I = 0 signal prior to a change in torque direction. These pulses cause the current to decay before a change in torque direction; the thyristors are fired in pairs to prevent sudden chopping and the generation of overvoltage by the load inductance when the current drops below the thyristor holding current. When a change in torque direction is required, the current in the existing direction must be reduced.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50180[0...n] Torque limiting torque limit 1 positive / T lim 1 pos</td>
<td>Sets positive torque limit 1.</td>
<td>Refer to: p50182</td>
<td>If torque limit changeover is selected (p50694 = 1) and the speed is higher than the set changeover speed (p50184), then torque limit 2 is activated in place of torque limit 1.</td>
</tr>
<tr>
<td>p50181[0...n] Torque limiting torque limit 1 negative / T lim 1 neg</td>
<td>Sets negative torque limit 1.</td>
<td>Refer to: p50183</td>
<td>If torque limit changeover is selected (p50694 = 1) and the speed is higher than the set changeover speed (p50184), then torque limit 2 is activated in place of torque limit 1.</td>
</tr>
<tr>
<td>p50182[0...n] Torque limiting torque limit 2 positive / T lim 2 pos</td>
<td>Sets positive torque limit 2.</td>
<td>Refer to: p50180</td>
<td>If torque limit changeover is selected (p50694 = 1) and the speed is higher than the set changeover speed (p50184), then torque limit 2 is activated in place of torque limit 1.</td>
</tr>
<tr>
<td>p50183[0...n] Torque limiting torque limit 2 negative / T lim 2 neg</td>
<td>Sets negative torque limit 2.</td>
<td>Refer to: p50181</td>
<td>If torque limit changeover is selected (p50694 = 1) and the speed is higher than the set changeover speed (p50184), then torque limit 2 is activated in place of torque limit 1.</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50184[n]</td>
<td>Torque limiting changeover speed / T\textsubscript{lim n_chng}</td>
<td>Can be changed: U, T</td>
<td>Sets the changeover speed for torque limit selection. If torque limit changeover is selected (p50694 = 1) and the speed (p52166) is higher than the changeover speed set in p50184, then torque limit 2 (p50182, p50183) is activated in place of torque limit 1 (p50180, p50181).</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6825</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [%] 120.00 [%] 0.00 [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p50190[n] | Cl-loop arm current ctr prectr setpoint smoothing time constant / I\textsubscript{a prec set T} | Can be changed: U, T | Sets the time constant for smoothing the armature current setpoints at the armature current pre-control input for closed-loop armature current control. The smoothing time constant is used to decouple armature current pre-control from the armature current controller. |
| Data type: FloatingPoint32 | Calculated: - | Access level: 2 |
| P-Group: - | Dyn. index: DDS, p0180 | Func. diagram: 6855 |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| Factory setting | 0 [ms] 10000 [ms] 0 [ms] |

| p50191[n] | Cl-loop arm current ctr curr controller setp sm time constant / I\textsubscript{a ctr set T} | Can be changed: U, T | Sets the time constant for smoothing the armature setpoint for closed-loop armature current control. The smoothing time constant is used to decouple armature current pre-control from the armature current controller. |
| Data type: FloatingPoint32 | Calculated: - | Access level: 2 |
| P-Group: - | Dyn. index: DDS, p0180 | Func. diagram: 6855 |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| Factory setting | 0 [ms] 10000 [ms] 0 [ms] |

| p50192[n] | Armature Alpha W limit control word / A Alpha W lim STW | Can be changed: U, T | Sets the control word for the Alpha W limit on the armature. |
| Data type: Integer16 | Calculated: - | Access level: 2 |
| P-Group: - | Dyn. index: DDS, p0180 | Func. diagram: 6860 |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| Factory setting | 0 1 0 |

Description: Sets the control word for the Alpha W limit on the armature.

Value:
- 0: Alpha W limit = 165 ° with pulsating armature current
- 1: Alpha W limit = p50151

Note:
- If value = 0: Continuous current: Alpha W limit = parameter p50151
- Pulsating current: Alpha W limit = 165 °
- If value = 1: Alpha W limit = parameter p50151
2 Parameters

2.2 List of parameters

---

**p50193**

**CI: EMF/Ua external signal source / EMF/Ua ext sig s**

- **DC_CTRL**
- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:**
Sets the signal source for EMF actual value or armature voltage actual value for armature current pre-control.

If **p50162[D] = 2:** Armature voltage actual value
If **p50162[D] = 3:** EMF actual value

---

**p50200[0...n]**

**Speed controller speed actual value smoothing time constant / n_ctr n_act T**

- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0 [ms]
- **Max:** 10000 [ms]

**Description:**
Sets the smoothing time constant for smoothing the speed actual value on the speed controller.

---

**p50201[0...n]**

**Band-stop 1 resonant frequency / Band-st 1 f_n**

- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 1 [Hz]
- **Max:** 140 [Hz]

**Description:**
Sets the resonant frequency for band-stop 1.

**Dependency:**
Refer to: p50202, p50628, r52177

---

**p50202[0...n]**

**Band-stop 1 quality / Band-st 1 quality**

- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 3

**Description:**
Sets the quality for band-stop 1.

**Value:**
0: Quality = 0.5
1: Quality = 1
2: Quality = 2
3: Quality = 3

**Dependency:**
Refer to: p50201, p50628, r52177

---

**p50203[0...n]**

**Band-stop 2 resonant frequency / Band-st 2 f_n**

- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 1 [Hz]
- **Max:** 140 [Hz]

**Description:**
Sets the resonant frequency for band-stop 2.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50204[0...n]</td>
<td>Band-stop 2 quality / Band-st 2 quality</td>
<td>Sets the quality for band-stop 2.</td>
<td>0: Quality = 0.5, 1: Quality = 1, 2: Quality = 2, 3: Quality = 3</td>
</tr>
<tr>
<td>p50205[0...n]</td>
<td>Derivative-action element derivative-action time / D-act el ( t_{d-act} )</td>
<td>Sets the derivative-action time for the derivative-action element.</td>
<td>0 [ms] to 1000 [ms], Factory setting 0 [ms]</td>
</tr>
<tr>
<td>p50206[0...n]</td>
<td>Derivative-action element smoothing time / Der-act el ( t_{DAE} )</td>
<td>Sets the smoothing time for the derivative-action element.</td>
<td>0 [ms] to 100 [ms], Factory setting 0 [ms]</td>
</tr>
<tr>
<td>p50207</td>
<td>CI: Lead/lag element signal source / Lead/lag elem ( S_s )</td>
<td>Sets the signal source for the lead/lag element.</td>
<td>Refer to: p50208, p50209, r52156</td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access Level</th>
<th>Data Type</th>
<th>Func. Diagram</th>
<th>Dyn. Index</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50208[0...n]</strong> Lead/lag element rate time / Lead/lag t_rate</td>
<td>Sets the rate time for the lead/lag element.</td>
<td>Access level: 2</td>
<td>FloatingPoint32</td>
<td>6810</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>p50209[0...n]</strong> Lead/lag element filter time / Lead/lag t_filter</td>
<td>Sets the filter time for the lead/lag element.</td>
<td>Access level: 2</td>
<td>FloatingPoint32</td>
<td>6810</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>r50217</strong> Speed controller droop effective / n_ctr droop_eff</td>
<td>Displays the effective droop on the speed controller.</td>
<td>Access level: 1</td>
<td>FloatingPoint32</td>
<td>6805</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>r50218</strong> Speed controller integral time effective / n_ctr Tn eff</td>
<td>Displays the effective integral time (Tn) on the speed controller.</td>
<td>Access level: 1</td>
<td>FloatingPoint32</td>
<td>6805</td>
<td>DDS, p0180</td>
</tr>
<tr>
<td><strong>r50219</strong> CO: Speed controller P-gain effective / n_ctr Kp eff</td>
<td>Displays the effective P gain (Kp) on the speed controller.</td>
<td>Access level: 1</td>
<td>FloatingPoint32</td>
<td>6805</td>
<td>DDS, p0180</td>
</tr>
</tbody>
</table>
### Description:
Sets the threshold for the speed setpoint to changeover between PI and P control, so that overshoot-free stopping of the drive with setpoint = 0 is possible with the controllers enabled.

### Dependency:
Refer to: p50221, p50222, p50698, r52166

![Table](p50220.png)

### Description:
Sets the hysteresis to changeover over between PI and P control, so that overshoot-free stopping of the drive with setpoint = 0 is possible with the controllers enabled.

### Dependency:
Refer to: p50221, p50222, p50698, r52166

![Table](p50221.png)

### Description:
Sets the threshold for the speed actual value to changeover between PI and P control, so that overshoot-free stopping of the drive with setpoint = 0 is possible with the controllers enabled.

### Dependency:
Refer to: p50221, p50222, p50698, r52166

![Table](p50222.png)

### Description:
Sets the enable signal for pre-control of the speed controller.

### Value:
- 0: No enable
- 1: Enable

### Note:
Dependent upon the setting, the following values are added to the output of the speed controller as a torque setpoint:
- Value = 0: No enable (0%)
- Value = 1: Enable (r52171)
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50224[0...n]</strong></td>
<td>Speed controller integral component configuration / n_ctr I comp conf</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
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<td>Description:</td>
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<td>Value:</td>
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<td></td>
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</tr>
</tbody>
</table>

| **p50225[0...n]** | Speed controller adaptation Kp y coordinate 2 / Adapt Kp y2 | Can be changed: U, T | Calculated: - |
| DC_CTRL | Access level: 2 | Data type: FloatingPoint32 | Dyn. index: DDS, p0180 |
| | | P-Group: - | Unit group: - |
| | | Not for motor type: - | Scaling: - |
| | | Min | Max |
| | | 0.10 | 2000.00 |
| | | Description: | Sets the y coordinate for pair of values 2 for adaptation of the P gain (Kp). |
| | | Note: | The value is set automatically during the optimization run for the speed controller (p50051 = 26). |
| | | | The adaptation of the P gain (Kp) is defined using 2 pairs of values. |
| | | | Pair of values 1: |
| | | | | p50556/p50550 (x/y coordinate) |
| | | | Pair of values 2: |
| | | | | p50559/p50225 (x/y coordinate) |

| **p50226[0...n]** | Speed controller adaptation Tn y coordinate 2 / Adapt Tn y2 | Can be changed: U, T | Calculated: - |
| DC_CTRL | Access level: 2 | Data type: FloatingPoint32 | Dyn. index: DDS, p0180 |
| | | P-Group: - | Unit group: - |
| | | Not for motor type: - | Scaling: - |
| | | Min | Max |
| | | 0.010 [s] | 10.000 [s] |
| | | Description: | Sets the y coordinate for pair of values 2 for adaptation of the integral time (Tn). |
| | | Note: | The value is set automatically during the optimization run for the speed controller (p50051 = 26). |
| | | | The adaptation of the integral time (Tn) is defined using 2 pairs of values. |
| | | | Pair of values 1: |
| | | | | p50557/p50551 (x/y coordinate) |
| | | | Pair of values 2: |
| | | | | p50560/p50226 (x/y coordinate) |

| **p50227[0...3]** | Speed controller adaptation droop y coordinate 2 / Adapt droop y2 | Can be changed: U, T | Calculated: - |
| DC_CTRL | Access level: 2 | Data type: FloatingPoint32 | Dyn. index: - |
| | | P-Group: - | Unit group: - |
| | | Not for motor type: - | Scaling: - |
| | | Min | Max |
| | | 0.000 | 10.000 |
| | | Description: | Sets the y coordinate for pair of values 2 for adaptation of the droop. |
Notice:
- For the droop, generally values up to 10% are practical (p50227 = 0.000 ... 0.100). Under certain circumstances, higher values can result in an unstable response of the speed controller.
- The droop is entered as absolute factor without any dimensions and it is especially important to note that it is not a percentage.

Example:
Set droop = 5% --> p50227 = 0.05

Note:
The adaptation of the droop is defined using 2 pairs of values.
Pair of values 1:
p50558/p50552 (x/y coordinate)
Pair of values 2:
p50561/p50227 (x/y coordinate)

### p50228[0...n] Speed controller speed setpoint smoothing time constant / n_ctr n_set T

**DC_CTRL**
- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: DDS, p0180
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Description: Sets the smoothing time constant for smoothing the speed setpoint on the speed controller.
- Recommendation:
- Value:
- Factory setting

### p50229[0...n] Mast/Sl drive ctr speed controller tracking I component / M/S drive ctr track

**DC_CTRL**
- Can be changed: T
- Calculated: -
- Access level: 2
- Data type: Integer16
- Dyn. index: DDS, p0180
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Description: Setting for the control of the integral component tracking on the speed controller.
- Value:
- Factory setting

### p50230[0...n] Set speed controller integral component duration / Set l_comp dur

**DC_CTRL**
- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: DDS, p0180
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Description: Sets the duration for setting the integral component on the speed controller.
- Following a positive edge on binector input p50695, the integral component of the speed controller is set to the value of the signal source set at connector input p50631.
2 Parameters

2.2 List of parameters

If \( p50230 = 0 \):
The integral component of the speed controller is set to the instantaneous value of the signal present at connector input \( p50631 \).
If \( p50230 > 0 \):
The integral component of the speed controller is tracked continuously during the time set to the value of the signal present at connector input \( p50631 \).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p50234[0...n] )</td>
<td>Speed controller proportional component enable / ( n_{ctr} ) P_comp_ena</td>
<td>Can be changed: T</td>
<td>Setting for enabling the proportional component for the speed controller.</td>
<td>Setting for enabling the proportional component for the speed controller.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Value: 0: Without proportional component</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data type: Integer16</td>
<td>Dyn. index: DDS, p0180</td>
<td>1: With proportional component</td>
<td></td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit 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></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p50236 )</td>
<td>Speed controller optimization speed controller dynamic response / ( n_{ctr}) opt dyn</td>
<td>Can be changed: T</td>
<td>Sets the dynamic response of the speed control circuit as the default for the speed controller optimization run.</td>
<td>Sets the dynamic response of the speed control circuit as the default for the speed controller optimization run.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>On drives with gear backlash, for example, optimization should be started commencing with low dynamic response values at and above 10%.</td>
<td>On drives with gear backlash, for example, optimization should be started commencing with low dynamic response values at and above 10%.</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>On drives with maximum requirements in terms of synchronous operation and dynamic response, values of up to 100% can be selected.</td>
<td>On drives with maximum requirements in terms of synchronous operation and dynamic response, values of up to 100% can be selected.</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10 [%]</td>
<td>100 [%]</td>
<td>75 [%]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Recommendation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p50237[0...n] )</td>
<td>Speed controller reference model natural frequency / ( n_{ctrl}) ref_m fn</td>
<td>Can be changed: U, T</td>
<td>Sets the natural frequency of a PT2 element for the reference model of the speed controller.</td>
<td>Sets the natural frequency of a PT2 element for the reference model of the speed controller.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>The reference model is correctly set when the characteristics of ( r52154 ) (reference model output) and ( r52167 ) (actual speed value) are virtually identical when the I component of the speed controller is disabled.</td>
<td>The reference model is correctly set when the characteristics of ( r52154 ) (reference model output) and ( r52167 ) (actual speed value) are virtually identical when the I component of the speed controller is disabled.</td>
</tr>
<tr>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>In conjunction with ( p50238 ) and ( p50239 ), the characteristics (in time) of the P-controlled speed control loop can be emulated.</td>
<td>In conjunction with ( p50238 ) and ( p50239 ), the characteristics (in time) of the P-controlled speed control loop can be emulated.</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Refer to: ( p50238 ), ( p50239 )</td>
<td>Refer to: ( p50238 ), ( p50239 )</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></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.0 [Hz]</td>
<td>150.0 [Hz]</td>
<td>0.0 [Hz]</td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**p50238[0...n]**  
**Speed controller reference model damping / n_ctrl_ref_m_d**  
| DC_CTRL |  
| --- | --- | --- |  
| Can be changed: | U, T | Calculated: | - |  
| Data type: | FloatingPoint32 | Dyn. index: | DDS, p0180 | Func. diagram: | 6812 |  
| P-Group: | - | Unit group: | - | Unit selection: | - |  
| Not for motor type: | - | Scaling: | - | Expert list: | 1 |  
| Min | Max | Factory setting |  
| 0.000 | 5.000 | 1.000 |  

Description: Sets the damping of a PT2 element for the reference model of the speed controller.
Recommendation: The reference model is correctly set when the characteristics of r52154 (reference model output) and r52167 (actual speed value) are virtually identical when the I component of the speed controller is disabled.
Dependency: In conjunction with p50237 and p50239, the characteristics (in time) of the P-controlled speed control loop can be emulated.
Refer to: p50237, p50239

**p50239[0...n]**  
**Speed controller reference model dead time / n_ctr_ref_m_t_dead**  
| DC_CTRL |  
| --- | --- | --- |  
| Can be changed: | U, T | Calculated: | - |  
| Data type: | FloatingPoint32 | Dyn. index: | DDS, p0180 | Func. diagram: | 6812 |  
| P-Group: | - | Unit group: | - | Unit selection: | - |  
| Not for motor type: | - | Scaling: | - | Expert list: | 1 |  
| Min | Max | Factory setting |  
| 0.00 | 2.00 | 0.00 |  

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 multiplier set refers to the speed controller clock cycle.
Recommendation: The reference model is correctly set when the characteristics of r52154 (reference model output) and r52167 (actual speed value) are virtually identical when the I component of the speed controller is disabled.
Dependency: In conjunction with p50237 and p50238, the characteristics (in time) of the P-controlled speed control loop can be emulated.
Refer to: p50237, p50238

**p50240[0...n]**  
**Speed controller reference model activation / n_ctrl_ref_m_act**  
| DC_CTRL |  
| --- | --- | --- |  
| Can be changed: | T | Calculated: | - |  
| Data type: | Integer16 | Dyn. index: | DDS, p0180 | Func. diagram: | 6815 |  
| P-Group: | - | Unit group: | - | Unit selection: | - |  
| Not for motor type: | - | Scaling: | - | Expert list: | 1 |  
| Min | Max | Factory setting |  
| 0 | 1 | 0 |  

Description: Setting to activate the influence of the reference model for the speed controller.
Value:
0: Reference model not effective
1: Reference model effective
Dependency: Refer to: p50241

**p50241**  
**CI: Speed controller reference model signal source / n_ctrl_ref_m_sig_s**  
| DC_CTRL |  
| --- | --- | --- |  
| Can be changed: | T | Calculated: | - |  
| Data type: | Unsigned32 / FloatingPoint32 | Dyn. index: | - | Func. diagram: | 6815 |  
| P-Group: | - | Unit group: | - | Unit selection: | - |  
| Not for motor type: | - | Scaling: | PERCENT | Expert list: | 1 |  
| Min | Max | Factory setting |  
| - | - | 52155[0] |  

Description: Sets the signal source for the input signal of the reference model for the speed controller.
Dependency: Refer to: p50240
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Reference</th>
<th>Field converter Alpha G limit / Field Alpha G lim</th>
<th>Field converter Alpha W limit / Field Alpha W lim</th>
<th>Field average number of line periods / Field line per no.</th>
<th>Field pre-control activation / Field prec act</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Can be changed:</strong></td>
<td>U, T</td>
<td>U, T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
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<td>FloatingPoint32</td>
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<td>DDS, p0180</td>
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<td><strong>Unit group:</strong></td>
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</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>0 [°]</td>
<td>0 [°]</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Max:</strong></td>
<td>180 [°]</td>
<td>180 [°]</td>
<td>20</td>
<td>1</td>
</tr>
</tbody>
</table>

### Description:
- **Sets the rectifier stability limit for the firing angle of the field converter.**
- **Sets the inverter stability limit for the firing angle of the field converter.**
- **Sets the number of line periods for line frequency correction in the field circuit.**
- **Sets activation/de-activation for field pre-control.**

### Dependency:
- Refer to: r53191
- The status of the Alpha G limit is shown in r53191.1.
- The status of the Alpha W limit is shown in r53191.0.

### Note:
- The internal line synchronization for the field firing pulses derived from the power terminals (line infeed) is averaged over the number of line periods set in this parameter.
- In the case of operation on "weak" power supplies with unstable frequencies (on a diesel-driven generator, for example (isolated operation), this parameter must be set lower than for operation on "constant V/Hz" systems to achieve a higher frequency correction speed.
- The field pre-control output is -100% (corresponds to 180 °).
### 2 Parameters

#### 2.2 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>p50254[0...n]</td>
<td>Field current controller integral component activation / I_field_ctr I comp</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6910</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
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<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></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Description:</strong></td>
<td>Sets activation/de-activation of the integral component on the field current controller.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Value:</strong></td>
<td>0: Deactivated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Activated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Dependency:</strong></td>
<td>Refer to: p50255, p50256</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong></td>
<td>If value = 0: The integral component of the field current controller is kept constantly at zero (i.e. the field current controller functions solely as a proportional controller).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p50255[0...n] | Field current controller P gain / I_field ctr Kp | Can be changed: U, T | Calculated: - | Access level: 2 |
|            | Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 6908 |
|            | P-Group: - | Unit group: - | Unit selection: - |
|            | Not for motor type: - | Scaling: - | Expert list: 1 |
|            | Min | Max | Factory setting |
|            | 0.01 | 100.00 | 5.00 |
|            | **Description:** | Sets the P gain of the field current controller. |
|            | **Dependency:** | Refer to: p50256 |
|            | **Note:** | The parameter is set automatically during the optimization run for closed-loop field current control (p50051 = 24). |

| p50256[0...n] | Field current controller integral time / I_field ctr Tn | Can be changed: U, T | Calculated: - | Access level: 2 |
|            | Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 6908 |
|            | P-Group: - | Unit group: - | Unit selection: - |
|            | Not for motor type: - | Scaling: - | Expert list: 1 |
|            | Min | Max | Factory setting |
|            | 0.001 [s] | 10.000 [s] | 0.200 [s] |
|            | **Description:** | Sets the integral time of the field current controller. |
|            | **Dependency:** | Refer to: p50255 |
|            | **Note:** | The parameter is set automatically during the optimization run for closed-loop field current control (p50051 = 24). |

| p50257[0...n] | Closed-loop field current control standstill field / If_ctr stst_field | Can be changed: U, T | Calculated: - | Access level: 2 |
|            | Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 6910 |
|            | P-Group: - | Unit group: - | Unit selection: - |
|            | Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
|            | Min | Max | Factory setting |
|            | 0.0 [%] | 100.0 [%] | 0.0 [%] |
|            | **Description:** | Sets the standstill field for closed-loop field current control. |
|            | **Dependency:** | Refer to: p50692 |
|            | **Note:** | The field current is reduced to this value when the "Automatic field current reduction" function is parameterized (p50082 = 2) or in the case of signal-driven selection of the "Standstill excitation" function (p50692). |
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Type</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50258[0...n]</strong></td>
<td>CI-loop field current control field current reduction delay time / ( \text{If}<em>{\text{ctr}} _\text{I}</em>{\text{red}} _\text{t}_{\text{del}} )</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6910</td>
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<td>P-Group: -</td>
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<td>Unit selection: -</td>
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<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</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></td>
<td>0.0 [s]</td>
<td>60.0 [s]</td>
<td>10.0 [s]</td>
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<td></td>
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<tr>
<td><strong>p50260[0...n]</strong></td>
<td>Field current pre-control setpoint smoothing time constant / Field_{\text{prec}} set T</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td></td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6910</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
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<tr>
<td><strong>p50261[0...n]</strong></td>
<td>Field current controller setpoint smoothing time constant / ( \text{I}_{\text{field} _\text{ctr}} _\text{set} _\text{T} )</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6910</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td></td>
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<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p50263[0...n]</strong></td>
<td>Selection of motor flux input variable / Mot_{\text{fl input sel}}</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<td></td>
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</tr>
<tr>
<td></td>
<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></td>
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<td>2</td>
<td>1</td>
<td></td>
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</tr>
</tbody>
</table>

**Notes:**
- This setting is recommended for a fully compensated DC motor.
- This setting is recommended for an uncompensated DC motor. The EMF controller must be active for this setting (the EMF controller compensates the armature reaction).
- This setting is recommended for a fully compensated DC motor.
2 Parameters

2.2 List of parameters

Advantage compared with value = 0:
Values derived from the setpoint are generally steadier than those derived from the actual value.
Disadvantage compared with value = 0:
The actual value can deviate from the setpoint dramatically, thereby distorting the motor flux calculation.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50264[0...n]</td>
<td>Field current controller proportional component activation / i_field_ctr P comp</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
<td>Data type: Integer16</td>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6910</td>
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<tr>
<td>P-Group: -</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></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>
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</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets activation/de-activation of the proportional component on the field current controller.
Value: 0: Deactivated
1: Activated
Dependency: Refer to: p50255, p50256
Note: If value = 0:
The proportional component of the field current controller is kept constantly at zero (i.e. the field current controller functions solely as an integral controller).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50265[0...n]</td>
<td>BI: Signal source for field current monitoring / i_field_mon sig s</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 8044</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></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>
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</tr>
<tr>
<td>-</td>
<td>-</td>
<td>1</td>
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</tr>
</tbody>
</table>

Description: Sets the signal source for external monitoring of the field current.
The delay time in p50397 is started after a 1/0 signal and a corresponding fault is triggered once it has elapsed.
Dependency: Refer to: p50397
Refer to: F60005

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50266[0...n]</td>
<td>CI: Field current controller Tn factor signal source / if_ctrTnFact sig s</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td></td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 6908</td>
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<td>P-Group: -</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
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<tr>
<td>Not for motor type: -</td>
<td></td>
<td>Scaling: PERCENT</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>
<td>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Sets the signal source for a factor of the integral time Tn for the field current controller.
Dependency: Refer to: p50256

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50267[0...n]</td>
<td>CI: Field current controller Kp factor signal source / if_ctrKpFact sig s</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td></td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 6908</td>
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<td>P-Group: -</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
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<td>-</td>
<td>1</td>
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</table>

Description: Sets the signal source for a factor of the proportional gain Kp for the field current controller.
Dependency: Refer to: p50255
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Notice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50269</strong></td>
<td>Freeze field current setpoint operating mode / If freeze op_mode</td>
<td>Can be changed: U, T</td>
<td>Sets the operating mode for the &quot;Freeze field current setpoint&quot; function.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Notice: For settings 0 and 1, when a fault message occurs, the EMF control remains active. Even if the speed sensing is faulted or if the contactor on the DC side is open. In these cases, the EMF controller cannot prevent overvoltages occurring at the motor. As a consequence, measures must be ensured on the system side that ensure that the motor is not damaged by overvoltages.</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6905</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>Min</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>0</td>
<td>2</td>
<td>2</td>
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</tr>
</tbody>
</table>

| **p50272** | Field current reduction activation / I_field_red act | Can be changed: T | Sets activation/de-activation of automatic field current reduction if the EMF is too high for braking operation. |
| Data type: Integer16 | Calculated: - | Access level: 2 | Value: 0: Fault |
| P-Group: - | Dyn. index: - | Func. diagram: 6900 | 1: Alarm and field reduction |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| 0 | 1 | 0 |

| **p50273[0...n]** | EMF controller pre-control activation / EMF ctr prec act | Can be changed: T | Sets activation/de-activation for EMF controller pre-control. |
| Data type: Integer16 | Calculated: - | Access level: 2 | Value: 0: Deactivated |
| P-Group: - | Dyn. index: DDS, p0180 | Func. diagram: 6900 | 1: Activated |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| 0 | 1 | 1 |

| **p50274[0...n]** | EMF controller integral component activation / EMF ctr I comp act | Can be changed: T | Sets activation/de-activation of the integral component on the EMF controller. |
| Data type: Integer16 | Calculated: - | Access level: 2 | Value: 0: |
| P-Group: - | Dyn. index: DDS, p0180 | Func. diagram: 6900 | 1: |
| Not for motor type: - | Unit group: - | Unit selection: - |
| Min | Scaling: - | Expert list: 1 |
| Max | Factory setting |
| 0 | 1 | 1 |
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Value Options</th>
<th>Dependency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50275[0...n]</strong> EMF controller P gain / EMF ctr Kp</td>
<td>Sets the P gain of the EMF controller.</td>
<td>0: Deactivated, 1: Activated</td>
<td>Refer to: p50284</td>
<td>If value = 0: The integral component of the EMF controller is kept constantly at zero (i.e. the EMF controller functions solely as a proportional controller).</td>
</tr>
<tr>
<td><strong>p50276[0...n]</strong> EMF controller integral time / EMF ctr Tn</td>
<td>Sets the integral time of the EMF controller.</td>
<td>0: Deactivated, 1: Activated</td>
<td>Refer to: p50275</td>
<td>The parameter is set automatically during the optimization run for field weakening (p50051 = 27).</td>
</tr>
<tr>
<td><strong>p50277[0...n]</strong> EMF controller droop / EMF ctr droop</td>
<td>Sets the value for the EMF controller's droop feedback.</td>
<td>0: Deactivated, 1: Activated</td>
<td>Refer to: p50275</td>
<td>The parameter is set automatically during the optimization run for field weakening (p50051 = 27).</td>
</tr>
<tr>
<td><strong>p50280[0...n]</strong> EMF controller pre-control setpoint smoothing time constant / EMF prec set T</td>
<td>Sets the smoothing time constant for the setpoint for EMF controller pre-control.</td>
<td>0: Deactivated, 1: Activated</td>
<td>Refer to: p50283</td>
<td>This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Name</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50281[0...n]</td>
<td>EMF controller setpoint smoothing time constant / EMF ctr set T</td>
<td>Sets the smoothing time constant for the EMF controller's setpoint.</td>
<td>This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.</td>
</tr>
<tr>
<td>p50282[0...n]</td>
<td>EMF controller actual value smoothing time constant / EMF ctr act T</td>
<td>Sets the smoothing time constant for the EMF controller's actual value.</td>
<td>This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.</td>
</tr>
<tr>
<td>p50283[0...n]</td>
<td>EMF controller pre-control actual value smoothing time constant / EMF prec act T</td>
<td>Sets the smoothing time constant for the actual value for EMF controller pre-control.</td>
<td>This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.</td>
</tr>
<tr>
<td>p50284[0...n]</td>
<td>EMF controller proportional component activation / EMF ctr P comp act</td>
<td>Sets activation/de-activation of the proportional component on the EMF controller.</td>
<td>The proportional component of the EMF controller is kept constantly at zero (i.e. the EMF controller functions solely as an integral controller).</td>
</tr>
</tbody>
</table>

**p50281[0...n]**

**Parameter Name:** EMF controller setpoint smoothing time constant / EMF ctr set T  
**DC_CTRL**

<table>
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<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the smoothing time constant for the EMF controller's setpoint.

**Dependency:** Refer to: p50282

**Note:** This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.

**p50282[0...n]**

**Parameter Name:** EMF controller actual value smoothing time constant / EMF ctr act T  
**DC_CTRL**

<table>
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<tr>
<th>Can be changed:</th>
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<th>Calculated:</th>
<th>Access level: 2</th>
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<tr>
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<td>Scaling:</td>
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</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
<td></td>
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</table>

**Description:** Sets the smoothing time constant for the EMF controller's actual value.

**Dependency:** Refer to: p50281

**Note:** This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.

**p50283[0...n]**

**Parameter Name:** EMF controller pre-control actual value smoothing time constant / EMF prec act T  
**DC_CTRL**

<table>
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<tr>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>Access level: 2</th>
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</thead>
<tbody>
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<td>DDS, p0180</td>
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<tr>
<td>P-Group:</td>
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<td>Unit group:</td>
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<tr>
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<td>-</td>
<td>Scaling:</td>
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</tr>
<tr>
<td>Min</td>
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<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
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**Description:** Sets the smoothing time constant for the actual value for EMF controller pre-control.

**Dependency:** Refer to: p50280

**Note:** This smoothing enables the EMF controller pre-control to be decoupled from the EMF controller.

**p50284[0...n]**

**Parameter Name:** EMF controller proportional component activation / EMF ctr P comp act  
**DC_CTRL**

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<tr>
<td>Not for motor type:</td>
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<td>Scaling:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets activation/de-activation of the proportional component on the EMF controller.

**Value:** 0: Deactivated  
1: Activated

**Dependency:** Refer to: p50275, p50276

**Note:** The proportional component of the EMF controller is kept constantly at zero (i.e. the EMF controller functions solely as an integral controller).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Factory settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50285[0...n]</td>
<td><strong>EMF setpoint reduction line voltage smoothing time / EMF set line t_sm</strong></td>
<td></td>
<td>0.00 [s] 10.00 [s] 0.00 [s]</td>
</tr>
<tr>
<td>p50286[0...n]</td>
<td><strong>EMF setpoint reduction line voltage upper limit / EMF set line upper</strong></td>
<td></td>
<td>100.0 [%] 150.0 [%] 110.0 [%]</td>
</tr>
<tr>
<td>p50287[0...n]</td>
<td><strong>EMF setpoint reduction line voltage lower limit / EMF set line lower</strong></td>
<td></td>
<td>0.0 [%] 100.0 [%] 0.0 [%]</td>
</tr>
<tr>
<td>p50288[0...n]</td>
<td><strong>EMF setpoint reduction evaluation factor / EMF set eval_fact</strong></td>
<td></td>
<td>0.0 [%] 200.0 [%] 100.0 [%]</td>
</tr>
<tr>
<td>p50289[0...n]</td>
<td><strong>BI: EMF setpoint reduction activation signal source / EMF set act sig s</strong></td>
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<td>- - 0</td>
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</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50295[0...n]</strong> Transition rounding operating mode / RFG rounding mode</td>
<td>Sets the response to setpoint inversion on the ramp-function generator.</td>
<td>0: Hard setpoint change</td>
<td>If p50295 = 0: In the event of setpoint inversion during ramping up, ramp-up is aborted and ramp-down initial rounding commences immediately, and vice versa. As the setpoint is not increased (decreased) any further, the signal at the ramp-function generator output has a breakpoint (in other words, there is a step change in the acceleration rate).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Soft setpoint change</td>
<td>If p50295 = 1: In the event of setpoint inversion during ramping up, ramp-up is slowly switched over to ramp-down, and vice versa. The setpoint increases/decreases further. There is no breakpoint in the signal at the ramp-function generator output (in other words, there is no step change in the acceleration rate).</td>
</tr>
</tbody>
</table>

| **p50296[0...n]** RFG quick stop (OFF3) ramp-down time / RFG OFF3 t_ramp-dn | Sets the ramp-down time for quick stop (OFF3) on the ramp-function generator. | 0.00 [s] 650.00 [s] 0.00 [s] | When the "Quick stop" command is sent, the drive is decelerated to zero speed at the current limit. However, if this is not permissible or desirable for mechanical reasons, a value > 0 must be set in this parameter. The drive will then decelerate along the down ramp set here. |

| **p50297[0...n]** RFG quick stop (OFF3) initial rounding / RFG OFF3 init rndg | Sets the initial rounding for quick stop (OFF3) on the ramp-function generator. | 0.00 [s] 100.00 [s] 0.00 [s] |

| **p50298[0...n]** RFG quick stop (OFF3) final rounding / RFG OFF3 fin rndg | Sets the final rounding for quick stop (OFF3) on the ramp-function generator. | 0.00 [s] 100.00 [s] 0.00 [s] |
### 2 Parameters

#### 2.2 List of parameters

##### p50300[0...n]

**RFG positive setpoint limit after ramp-function generator / RFG pos after RFG**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -200.00 [%]
- **Max:** 200.00 [%]

**Description:**
Sets positive setpoint limiting after the ramp-function generator.

**Value:**
- **Min:** 0 [%]
- **Max:** 100.00 [%]
- **Factory setting:** 100.00 [%]

**Access level:** 2
**Dyn. index:** DDS, p0180
**Func. diagram:** 3155
**Unit group:** -
**Unit selection:** -
**Expert list:** 1
**Scaling:** PERCENT

##### p50301[0...n]

**RFG negative setpoint limit after ramp-function generator / RFG neg after RFG**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -200.00 [%]
- **Max:** 200.00 [%]

**Description:**
Sets negative setpoint limiting after the ramp-function generator.

**Value:**
- **Min:** -200.00 [%]
- **Max:** 200.00 [%]
- **Factory setting:** -100.00 [%]

**Access level:** 2
**Dyn. index:** DDS, p0180
**Func. diagram:** 3155
**Unit group:** -
**Unit selection:** -
**Expert list:** 1
**Scaling:** PERCENT

##### p50302[0...n]

**RFG ramp-up integrator operating mode / RFG integ op mode**

**DC_CTRL**

- **Can be changed:** T
- **Data type:** Integer16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0
- **Max:** 3

**Description:**
Sets the operating mode for the ramp-up integrator.

**Value:**
- **0:** RFG normal operation
- **1:** Operating mode 1
- **2:** Operating mode 2
- **3:** Operating mode 3

**Access level:** 2
**Dyn. index:** DDS, p0180
**Func. diagram:** 3150
**Unit group:** -
**Unit selection:** -
**Expert list:** 1
**Scaling:** -

**Note:**
- The parameter sets are not changed over and ramp-function generator setting 1 is always used (or the setting made using p50637, p50638).
- Once the setpoint has been reached for the first time, the ramp-function generator parameter set is changed over from 1 to 0.
- Once the setpoint has been reached for the first time, the ramp-function generator parameter set is changed over from 1 to 2.
- Once the setpoint has been reached for the first time, the ramp-function generator parameter set is changed over from 1 to 3.

##### p50303[0...n]

**RFG ramp-up time 1 / RFG t_ramp-up 1**

**DC_CTRL**

- **Can be changed:** C2(1), U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0.00 [s]
- **Max:** 10.00 [s]

**Description:**
Sets the ramp-up time for ramp-function generator parameter set 1.

**Value:**
- **Min:** 0.00 [s]
- **Max:** 650.00 [s]
- **Factory setting:** 10.00 [s]

**Access level:** 1
**Dyn. index:** DDS, p0180
**Func. diagram:** 3150
**Unit group:** -
**Unit selection:** -
**Expert list:** 1
**Scaling:** -
2 Parameters
2.2 List of parameters

Note: The parameter is effective in the following cases:
- No quick stop (OFF3) active
- No other ramp-function generator parameter set selected
- No selection via ramp-up integrator

<table>
<thead>
<tr>
<th>p50304[0...n]</th>
<th>RFG ramp-down time 1 / RFG t_ramp-dn 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: C2(1), U, T</td>
<td></td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>650.00 [s]</td>
</tr>
</tbody>
</table>

Description: Sets the ramp-down time for ramp-function generator parameter set 1.

Note: The parameter is effective in the following cases:
- No quick stop (OFF3) active
- No other ramp-function generator parameter set selected
- No selection via ramp-up integrator

<table>
<thead>
<tr>
<th>p50305[0...n]</th>
<th>RFG initial rounding 1 / RFG init rndg 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: C2(1), U, T</td>
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<td>Data type: FloatingPoint32</td>
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<td>P-Group: -</td>
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<tr>
<td>Not for motor type: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>100.00 [s]</td>
</tr>
</tbody>
</table>

Description: Sets the initial rounding for ramp-function generator parameter set 1.

Dependency: Refer to: p50295

Note: The parameter is effective in the following cases:
- No quick stop (OFF3) active
- No other ramp-function generator parameter set selected
- No selection via ramp-up integrator

<table>
<thead>
<tr>
<th>p50306[0...n]</th>
<th>RFG final rounding 1 / RFG fin rndg 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Can be changed: C2(1), U, T</td>
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</tr>
<tr>
<td>0.00 [s]</td>
<td>100.00 [s]</td>
</tr>
</tbody>
</table>

Description: Sets the final rounding for ramp-function generator parameter set 1.

Dependency: Refer to: p50295

Note: The parameter is effective in the following cases:
- No quick stop (OFF3) active
- No other ramp-function generator parameter set selected
- No selection via ramp-up integrator
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Access Level</th>
<th>Calculated</th>
<th>Dyn. Index</th>
<th>Func. Diagram</th>
<th>Factory Setting</th>
<th>Not for Motor Type</th>
<th>Data Not for Motor Type</th>
<th>Expert List</th>
<th>Min [s]</th>
<th>Max [s]</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50307[0...n]</td>
<td>RFG ramp-up time 2 / RFG t_ramp-up 2</td>
<td>DC_CTRL</td>
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<td>-</td>
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<td>Access level 2</td>
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<td>3150</td>
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<td>-</td>
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<tr>
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<td>RFG initial rounding 2 / RFG init rndg 2</td>
<td>DC_CTRL</td>
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<td>Access level 2</td>
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<td>DDS, p0180</td>
<td>3150</td>
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<td>-</td>
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<td>Access level 2</td>
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<tr>
<td>Dependency</td>
<td>Refer to: p50295</td>
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<td>Access level 2</td>
<td>-</td>
<td>DDS, p0180</td>
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<td>-</td>
<td>-</td>
<td>1</td>
<td>0.00</td>
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<tr>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50312[0...n]</td>
<td>Sets the ramp-down time for ramp-function generator parameter set 3.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>650.00 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>10.00 [s]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50313[0...n]</td>
<td>Sets the initial rounding for ramp-function generator parameter set 3.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>100.00 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [s]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50314[0...n]</td>
<td>Sets the final rounding for ramp-function generator parameter set 3.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.00 [s]</td>
<td>100.00 [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [s]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50315[0...3]</td>
<td>Displays the effective times on the ramp-function generator.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>- [s]</td>
<td>- [s]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [s]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50316</td>
<td>Displays the state on the ramp-function generator.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

Index:
- [0] = Ramp-up time
- [1] = Ramp-down time
- [2] = Initial rounding
- [3] = Final rounding
2.2 List of parameters

### Parameters

**Description:**

Sets the enable for ramp-function generator tracking.

**Value:**

0: Inhibit
1: Enable

**Dependency:**

RFG tracking has to be controlled by setting a 1 signal at binector input p50647. Refer to: p50647

### p50318[0...n] RFG setting value selection / RFG set val sel

**Description:**

Selection of the setting value for the ramp-function generator output for OFF1.

**Value:**

0: Ramp-function generator output not set
1: Set RFG output to setting value 1
2: Set RFG output to setting value 2

**Recommendation:**

During "shutdown", limiting is not applied to the ramp-function generator output. As limiting the ramp-function generator output during "shutdown" does not generate a temporary increase in speed, p50318 should be set to 1 or 2.

**Dependency:**

Refer to: p50650

**Note:**

If p50318 = 0:
The ramp-function generator output is not set.
If p50318 = 1:
The value supplied via connector input p50650[0] is applied as the setting value.
If p50318 = 2:
The value supplied via connector input p50650[1] is applied as the setting value.

### p50319[0...n] RFG setpoint enable delay time / RFG set_ena i_del

**Description:**

Sets the delay time for enabling the setpoint on the ramp-function generator.

In the case of a setpoint enable, the setpoint is not injected on the ramp-function generator until this time has elapsed.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50320[0...n]</td>
<td>Setpoint processing main setpoint factor / m_set_factor</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index: DGS, p0180</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Min</td>
<td>-300.00 [%]</td>
<td>Max</td>
</tr>
<tr>
<td>Factory setting</td>
<td>100.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Description</td>
<td>Sets the fixed factor for the main setpoint.</td>
<td></td>
</tr>
<tr>
<td>Value</td>
<td>0: Second</td>
<td>1: Minute</td>
</tr>
</tbody>
</table>

| p50321[0...n] | Setpoint processing additional setpoint factor / Add_set_factor | Can be changed: U, T | Refer to: p50323 |
| DC_CTRL | | Calculated: - | |
| Data type: | FloatingPoint32 | Dyn. index: DGS, p0180 | |
| P-Group: | - | Unit group: - | |
| Not for motor type: | - | Scaling: PERCENT | |
| Min | -300.00 [%] | Max | 300.00 [%] |
| Factory setting | 100.00 [%] | |
| Description | Sets the fixed factor for the additional setpoint. | |

| p50322[0...n] | CI: Setpoint processing signal source for main setpoint factor / M set factor sig s | Can be changed: T | Refer to: p50320 |
| DC_CTRL | | Calculated: - | |
| Data type: | Unsigned32 / FloatingPoint32 | Dyn. index: CDS, p0170 | |
| P-Group: | - | Unit group: - | |
| Not for motor type: | - | Scaling: PERCENT | |
| Min | 1 | Max | 1 |
| Factory setting | 1 | |
| Description | Sets the signal source for the variable factor for the main setpoint. | |

| p50323[0...n] | CI: Setpoint processing signal source for additional setpoint factor / Add set fac sig s | Can be changed: T | Refer to: p50321 |
| DC_CTRL | | Calculated: - | |
| Data type: | Unsigned32 / FloatingPoint32 | Dyn. index: CDS, p0170 | |
| P-Group: | - | Unit group: - | |
| Not for motor type: | - | Scaling: PERCENT | |
| Min | 1 | Max | 1 |
| Factory setting | 1 | |
| Description | Sets the signal source for the variable factor for the additional setpoint. | |

| p50330[0...n] | RFG time unit / RFG time unit | Can be changed: T | Refer to: p50330 |
| DC_CTRL | | Calculated: - | |
| Data type: | Integer16 | Dyn. index: DGS, p0180 | |
| P-Group: | - | Unit group: - | |
| Not for motor type: | - | Scaling: - | |
| Min | 0 | Max | 1 |
| Factory setting | 0 | |
| Description | Sets the unit for the ramp-function generator times. | |
| Value | 0: Second | 1: Minute |
### Parameters

**Note:**
This time unit is applied to the following parameters:
P50296, P50297, P50298:
- Ramp-down time 4, initial rounding 4, final rounding 4
P50303, P50304, P50305, P50306:
- Ramp-up time 1, ramp-down time 1, initial rounding 1, final rounding 1
P50307, P50308, P50309, P50310:
- Ramp-up time 2, ramp-down time 2, initial rounding 2, final rounding 2
P50311, P50312, P50313, P50314:
- Ramp-up time 3, ramp-down time 3, initial rounding 3, final rounding 3
P50542:
- RFG dy/dt time difference

#### p50331 Braking distance Encoder Data Set selection / Br dist EDS sel

**Description:**
Sets the Encoder Data Set (EDS) used to calculate the braking distance (R52047, R52048).

**Dependency:**
Refer to: F60006

**Note:**
If the line voltage deviates by a higher value and does not fall back within the tolerance limits by the end of the restart time set in P50086, fault F60006 is triggered. During the time of excess deviation, the drive is kept in operating state "o4".

#### p50351[0...n] Line undervoltage threshold / Line V_und thresh

**Description:**
Sets the threshold for detecting line undervoltage for armature or field.

**Dependency:**
Refer to: F60006

**Note:**
If the line voltage deviates by a higher value and does not fall back within the tolerance limits by the end of the restart time set in P50086, fault F60006 is triggered. During the time of excess deviation, the drive is kept in operating state "o4". For "optimization run for CCP" (P50051 = 30) the parameter is automatically set to -20% if the actual value is less than -20%.

#### p50352[0...n] Line overvoltage threshold / Line V_over thresh

**Description:**
Sets the threshold for detecting line undervoltage for armature or field.

**Dependency:**
Refer to: F60007

**Note:**
If the line voltage deviates by a higher value and does not fall back within the tolerance limits by the end of the restart time set in P50086, fault F60007 is triggered. During the time of excess deviation, the drive is kept in operating state "o4".
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50353[0...n]</strong></td>
<td>Line monitoring phase failure threshold / Ph_fail thresh</td>
<td>Sets the threshold for phase failure detection in the context of line monitoring. If the line voltage in operating states &lt;= o4 undershoots the setting value and does not adopt an &quot;OK&quot; state within the restart time set in p50086, fault F60004 is triggered. During the time that the threshold value is undershot and the voltage stabilization time which follows (set in p50090), the drive is kept in operating state o4. If the drive is switched on in operating state o4, the voltages of all phases will not be checked for compliance with this threshold until the time set in p50089 has elapsed.</td>
</tr>
<tr>
<td><strong>p50354</strong></td>
<td>BI: Stall protection activation signal source / Stall pr act sig s</td>
<td>Sets the signal source to activate stall protection.</td>
</tr>
<tr>
<td><strong>p50355[0...n]</strong></td>
<td>Stall protection monitoring time / Stall t_mon</td>
<td>Sets the monitoring time for stall protection. The set time starts when a stalled drive is detected. If these conditions still prevail once the time has elapsed, stall protection is activated and fault F60035 is triggered.</td>
</tr>
<tr>
<td><strong>p50356[0...n]</strong></td>
<td>Stall protection threshold / Stall prot thresh</td>
<td>Sets the speed threshold for stall protection.</td>
</tr>
</tbody>
</table>

**p50353**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 3 [%]
- **Max:** 100 [%]

**Description:**
Sets the threshold for phase failure detection in the context of line monitoring.

**Note:**
If the line voltage in operating states <= o4 undershoots the setting value and does not adopt an "OK" state within the restart time set in p50086, fault F60004 is triggered. During the time that the threshold value is undershot and the voltage stabilization time which follows (set in p50090), the drive is kept in operating state o4. If the drive is switched on in operating state o4, the voltages of all phases will not be checked for compliance with this threshold until the time set in p50089 has elapsed.

**p50354**

**DC_CTRL**

- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal source to activate stall protection.

**Dependency:**
Refer to: p50355, p50356
Refer to: F60035

**Note:**
1 signal: Stall protection activated
0 signal: Stall protection de-activated

**p50355**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0.0 [s]
- **Max:** 600.0 [s]

**Description:**
Sets the monitoring time for stall protection.

**Dependency:**
Refer to: p50354, p50356
Refer to: F60035

**Note:**
"Stall protection" monitoring is switched off when p50355 = 0.00 s.

**p50356**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 0.0 [%]
- **Max:** 10.0 [%]

**Description:**
Sets the speed threshold for stall protection.

**Dependency:**
Refer to: p50355
Refer to: F60035
2 Parameters

2.2 List of parameters

**p50357[0...n]**  Tachometer interruption monitoring threshold / Tacho_mon thresh

| Description: | Sets the threshold for tachometer interruption monitoring. |
| Dependency: | Refer to: F60042 |
| Note: | For p50357 = 100 %, the tachometer interruption monitoring is not active! |

**p50361[0...n]**  Line monitoring undervoltage delay time / V_under t_del

| Description: | Sets the delay time for undervoltage detection in the context of line monitoring. |
| Note: | This time starts when undervoltage is detected. While this delay time is running, firing pulses are emitted; at the end of this time, fault F60006 is triggered. If a time has been set for automatic restart (p50086), it will not begin until the time set here has elapsed. |

**p50362[0...n]**  Line monitoring overvoltage delay time / Line V_over t_del

| Description: | Sets the delay time for overvoltage monitoring in the context of line monitoring. |
| Dependency: | Refer to: F60007 |
| Note: | The triggering of fault F60007 (line overvoltage) is delayed by the time set at this parameter. Firing pulses are emitted while this time is running. If a time has been set for automatic restart (p50086), it will not begin until the time set here has elapsed. |

**p50363[0...n]**  Line frequency minimum threshold / f_line min thresh

| Description: | Sets the threshold for detecting that the line frequency has been undershot. |
| Dependency: | Refer to: F60008 |
| Note: | If the line frequency undershoots the value set here and does not rise back above it within the restart time set in p50086, fault F60008 is triggered. All the while the line frequency remains lower than the value set here, the drive is kept in operating state "o4". |

---

**DC_CTRL**

**Can be changed:** U, T  
**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min**  
**Max**  
**10 [%]**  
**100 [%]**  
**Access level:** 2  
**Calc.:** -  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Scaling:** PERCENT  
**Func. diagram:** 8046  
**Expert list:** 1  
**Expert list:** 1  
**Factory setting:**  
**Min Max Factory setting**  
**0 [ms]**  
**60000 [ms]**  
**0 [ms]**  
**0 [ms]**  
**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min**  
**Max**  
**60000 [ms]**  
**0 [ms]**  
**Access level:** 2  
**Calc.:** -  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Scaling:** -  
**Func. diagram:** 6954  
**Expert list:** 1  
**Factory setting:**  
**Min Max Factory setting**  
**0 [ms]**  
**60000 [ms]**  
**0 [ms]**  
**0 [ms]**  
**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min**  
**Max**  
**23.0 [Hz]**  
**60.0 [Hz]**  
**45.0 [Hz]**  
**Access level:** 2  
**Calc.:** -  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Scaling:** -  
**Func. diagram:** 6954  
**Expert list:** 1  
**Factory setting:**  
**Min Max Factory setting**
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Access Level</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Factory Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50364[0...n]</td>
<td>Line frequency maximum threshold (/ f_{\text{line max thresh}}/)</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>50.0 [Hz] to 500.0 [Hz]</td>
</tr>
<tr>
<td>p50366[0...1]</td>
<td>CI: Current limitation signal source for speed and I2t monitoring (/ I_a \text{lim n I2t sig s})</td>
<td>3</td>
<td>Unsigned32 / FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>[0] 52129 [0] to [1] 52130 [0]</td>
</tr>
<tr>
<td>p50370[0...n]</td>
<td>Messages for speed less than minimum speed threshold (/ n &lt; n_{\text{min thresh}}/)</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [%] to 200.00 [%]</td>
</tr>
<tr>
<td>p50371[0...n]</td>
<td>Messages for speed less than minimum speed hysteresis (/ n &lt; n_{\text{min hyst}}/)</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0.00 [%] to 200.00 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the threshold for detecting that the line frequency has been overshot.

**Dependency:**
Refer to: F60009

**Caution:**
SINAMICS DCM DC converters are suitable for line frequencies from 50 Hz up to 60 Hz (rated value). Restricted operation in the extended frequency range (20 Hz to 500 Hz) is possible on request.

If a SINAMICS DCM DC converter is continuously operated in the extended frequency range, then it would be damaged or destroyed as a result of overheating.

The SINAMICS DCM Control Module is suitable for line frequencies from 20 Hz up to 500 Hz if it is operated with a power unit designed for this frequency range.

**Note:**
- If the line frequency overshoots the value set here and does not fall back below it within the restart time set in p50086, fault F60009 is triggered.
- All the while the line frequency remains higher than the value set here, the drive is kept in operating state "o4".

**Description:**
Sets the signal source for speed-dependent current limitation and current limitation from I2t monitoring.

**Note:**
- [0] = Speed-dependent current limitation
- [1] = Current limitation from I2t monitoring

**Description:**
Sets the threshold for the "Speed less then minimum speed" message.

**Dependency:**
Refer to: p50371, p50593, r53025

**Note:**
The "Speed less than minimum speed" message is available as follows:
- r53025.6 (not inverted)
- r53025.7 (inverted)

**Description:**
Sets the hysteresis for the "Speed less then minimum speed" message.
The message is triggered when the threshold is undershot. Once the value rises above the threshold plus the hysteresis, the message is withdrawn.

**Dependency:**
Refer to: p50370, p50593, r53025

**Note:**
The "Speed less than minimum speed reached" message is available as follows:
- r53025.6 (not inverted)
- r53025.7 (inverted)

**Description:**
Sets the hysteresis for the "Speed positive" message. This parameter acts on the "Speed setpoint positive" message as well as on the "Speed actual value positive" message.

**Dependency:**
Refer to: p50594, p50598, r53025

**Note:**
The "Speed positive" message is available as follows:
- r53025.8 (not inverted)
- r53025.9 (inverted)

**Actual value:**
- r53025.12 (not inverted)
- r53025.13 (inverted)

**Description:**
Sets the threshold for the "Reference speed reached" message.

**Dependency:**
Refer to: p50374, p50375, p50592, r53025

**Note:**
The "Reference speed reached" message is available as follows:
- r53025.4 (not inverted)
- r53025.5 (inverted)

**Description:**
Sets the hysteresis for the "Reference speed reached" message. The message is triggered when the threshold is overshot. Once the value falls below the threshold minus the hysteresis, the message is withdrawn.

**Dependency:**
Refer to: p50373, p50375, p50592, r53025
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>p50375[0...n]</th>
<th>Messages for reference speed OFF delay / Ref_speed t_OFF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.0 [s]</td>
<td>100.0 [s]</td>
</tr>
</tbody>
</table>

**Description:** Sets the OFF delay for the "Reference speed reached" message.

**Dependency:** Refer to: p50373, p50374, p50592, r53025

<table>
<thead>
<tr>
<th>p50376[0...n]</th>
<th>Messages for setpoint/actual value deviation 2 threshold / Set/act 2 thresh</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type:</td>
<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit 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>0.00 [%]</td>
<td>200.00 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the threshold for the "Setpoint/actual value deviation 2 reached" message.

**Dependency:** Refer to: p50377, p50378, p50596, p50597, r53025

**Note:** The "Setpoint/actual value deviation 2 reached" message is available as follows:
- r53025.2 (not inverted)
- r53025.3 (inverted)

<table>
<thead>
<tr>
<th>p50377[0...n]</th>
<th>Messages for setpoint/actual value deviation 2 hysteresis / Set/act 2 hyst</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
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<td>Dynamic index: DDS, p0180</td>
</tr>
<tr>
<td>P-Group:</td>
<td>Unit 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>0.00 [%]</td>
<td>200.00 [%]</td>
</tr>
</tbody>
</table>

**Description:** Sets the hysteresis for the "Setpoint/actual value deviation 2 reached" message. The message is triggered when the threshold is overshot. Once the value falls below the threshold minus the hysteresis, the message is withdrawn.

**Dependency:** Refer to: p50376, p50378, p50596, p50597, r53025

<table>
<thead>
<tr>
<th>p50378[0...n]</th>
<th>Messages for setpoint/actual value deviation 2 OFF delay / Set/act 2 t_OFF</th>
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</thead>
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<tr>
<td>P-Group:</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>0.0 [s]</td>
<td>100.0 [s]</td>
</tr>
</tbody>
</table>

**Description:** Sets the OFF delay for the "Setpoint/actual value deviation 2 reached" message.

**Dependency:** Refer to: p50376, p50377, p50596, p50597, r53025
## 2 Parameters

### 2.2 List of parameters

#### p50380[0...n]

**Messages for overspeed threshold positive direction of rotation / Msg n_over pos**

<table>
<thead>
<tr>
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<th>Access level: 2</th>
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<td>Access level: 2</td>
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<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Func. diagram: 8025</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>0.0 [%]</td>
<td>200.0 [%]</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the threshold for the maximum speed in positive direction of rotation.

**Dependency:**
Refer to: p50381, p50595, r53025
Refer to: F60038

**Note:**
The "Overspeed" message is available as follows:
- F60038
- r53025.10 (not inverted)
- r53025.11 (inverted)

#### p50381[0...n]

**Messages for overspeed threshold negative direction of rotation / Msg n_over neg**

<table>
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<tr>
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<td>Unit group: -</td>
<td>Func. diagram: 8025</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td>-200.0 [%]</td>
<td>0.0 [%]</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-120.0 [%]</td>
<td>-120.0 [%]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the threshold for the maximum speed in negative direction of rotation.

**Dependency:**
Refer to: p50381, p50595, r53025
Refer to: F60038

**Note:**
The "Overspeed" message is available as follows:
- F60038
- r53025.10 (not inverted)
- r53025.11 (inverted)

#### p50388[0...n]

**Messages for setpoint/actual value deviation 1 threshold / Set/act 1 thresh**

<table>
<thead>
<tr>
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<th>Can be changed: U, T</th>
<th>Calculated: -</th>
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<td>P-Group: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Expert list: 1</td>
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</tr>
<tr>
<td>0.00 [%]</td>
<td>200.00 [%]</td>
<td>Factory setting</td>
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</tr>
<tr>
<td>3.00 [%]</td>
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<td></td>
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</tr>
</tbody>
</table>

**Description:**
Sets the threshold for the "Setpoint/actual value deviation 1 reached" message.

**Dependency:**
Refer to: p50389, p50390, p50590, p50591, r53025
Refer to: F60031

**Note:**
The "Setpoint/actual value deviation 1 reached" message is available as follows:
- F60031
- r53025.0 (not inverted)
- r53025.1 (inverted)
### List of parameters

#### p50389[0...n] Messages for setpoint/actual value deviation 1 hysteresis / Set/act 1 hyst

<table>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>Not for motor type:</td>
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<td>Expert list: 1</td>
</tr>
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</table>

**Min:** 0.00 [%]  
**Max:** 200.00 [%]  
**Factory setting:** 1.00 [%]

**Description:**  
Sets the hysteresis for the "Setpoint/actual value deviation 1 reached" message.  
The message is triggered when the threshold is overshot.  
Once the value falls below the threshold minus the hysteresis, the message is withdrawn.

**Dependency:**  
Refer to: p50388, p50390, p50590, p50591, r53025  
Refer to: F60031

#### p50390[0...n] Messages for setpoint/actual value deviation 1 OFF delay / Set/act t_OFF

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<td>Func. diagram: 8020</td>
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<tr>
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<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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</table>

**Min:** 0.0 [s]  
**Max:** 100.0 [s]  
**Factory setting:** 3.0 [s]

**Description:**  
Sets the OFF delay for the "Setpoint/actual value deviation 1 reached" message.

**Dependency:**  
Refer to: p50388, p50389, p50590, p50591, r53025  
Refer to: F60031

#### p50394[0...n] Messages for field current threshold minimum threshold / Msg If min thresh

<table>
<thead>
<tr>
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<th>Access level: 2</th>
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<tbody>
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<td>Func. diagram: 8025</td>
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<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
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</table>

**Min:** 0.00 [%]  
**Max:** 200.00 [%]  
**Factory setting:** 3.00 [%]

**Description:**  
Sets the threshold for the "Field current threshold minimum" message.

**Dependency:**  
Refer to: p50395, r53026  
This threshold also affects the phase logic execution in the context of the Direction reversal by field reversal and Braking by field reversal functions.  
The "Field current threshold minimum" message is displayed via r53026.0.

#### p50395[0...n] Messages for field current threshold minimum hysteresis / Msg If min hyst

<table>
<thead>
<tr>
<th>DC_CTRL</th>
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<th>Calculated: -</th>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 8025</td>
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<td>-</td>
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<td>Unit selection: -</td>
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<tr>
<td>Not for motor type:</td>
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<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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</table>

**Min:** 0.00 [%]  
**Max:** 100.00 [%]  
**Factory setting:** 1.00 [%]

**Description:**  
Sets the hysteresis for the "Field current threshold minimum" message.  
The message is triggered when the threshold is undershot.  
Once the value rises above the threshold plus the hysteresis, the message is withdrawn.

**Dependency:**  
Refer to: r53026  
The "Field current threshold minimum" message is displayed via r53026.0.
### 2 Parameters

#### 2.2 List of parameters

**p50396[0...n]**  
Field current monitoring setpoint factor / If_mon set_fact  
<table>
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<tr>
<th>DC_CTRL</th>
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<th>Calculated: -</th>
<th>Access level: 2</th>
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<tbody>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>P-Group: -</td>
<td>Scaling: PERCENT</td>
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<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>1 [%]</td>
<td>100 [%]</td>
<td>50 [%]</td>
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**Description:** Sets the factor for the setpoint in the context of field current monitoring.

**Dependency:** Refer to: p50265, p50397  
Refer to: F60005

**p50397[0...n]**  
Field current monitoring fault delay time / If_mon F t_del  
<table>
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<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</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>0.02 [s]</td>
<td>60.00 [s]</td>
<td>0.50 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for triggering fault F60005 in the context of field current monitoring.

**Dependency:** Refer to: p50265, p50396  
Refer to: F60005

**p50398[0...n]**  
Messages for field current actual value less than setpoint fact / Msg If<set fact  
<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
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</thead>
<tbody>
<tr>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Scaling: PERCENT</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>0.00 [%]</td>
<td>200.00 [%]</td>
<td>80.00 [%]</td>
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</table>

**Description:** Sets the factor for the setpoint for the "Field current actual value less than setpoint" message.

**Dependency:** Refer to: p50399, r53026

**Note:** This threshold also affects the phase logic execution in the context of the Direction reversal by field reversal and Braking by field reversal functions.

The "Field current actual value less than setpoint" message is displayed via r53026.1.

**p50399[0...n]**  
Messages for field current actual value less than setpoint hyst / Msg If<set hyst  
<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: U, T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Dyn. index: DDS, p0180</td>
<td>Unit group: -</td>
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<tr>
<td>P-Group: -</td>
<td>Scaling: PERCENT</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>0.00 [%]</td>
<td>100.00 [%]</td>
<td>1.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the hysteresis for the "Field current actual value less than setpoint" message.

The message is triggered when the threshold is undershot (setpoint x factor).

Once the value rises above the threshold (setpoint x factor) plus the hysteresis, the message is withdrawn.

**Dependency:** Refer to: p50398, r53026

**Note:** The "Field current actual value less than setpoint" message is displayed via r53026.1.
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50401[0...n]</strong> Fixed value 1 / Fix val 1</td>
<td>Sets fixed value 1.</td>
<td>Refer to: r52401</td>
<td>This value can be interconnected via connector output r52401.</td>
</tr>
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<td>Func. diagram: 3100</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
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</tbody>
</table>

| **p50402[0...n]** Fixed value 2 / Fix val 2 | Sets fixed value 2. | Refer to: r52402 | This value can be interconnected via connector output r52402. |
| DC_CTRL | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 3100 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| -200.00 [%] | 200.00 [%] | 0.00 [%] |

| **p50403[0...n]** Fixed value 3 / Fix val 3 | Sets fixed value 3. | Refer to: r52403 | This value can be interconnected via connector output r52403. |
| DC_CTRL | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 3100 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| -200.00 [%] | 200.00 [%] | 0.00 [%] |

| **p50404[0...n]** Fixed value 4 / Fix val 4 | Sets fixed value 4. | Refer to: r52404 | This value can be interconnected via connector output r52404. |
| DC_CTRL | Can be changed: U, T | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 3100 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| -200.00 [%] | 200.00 [%] | 0.00 [%] |
### 2 Parameters

#### 2.2 List of parameters

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<th>Description</th>
<th>Dependency</th>
<th>Note</th>
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<tr>
<td>p50405[0...n]</td>
<td><strong>Fixed value 5 / Fix val 5</strong>&lt;br&gt;DC_CTRL&lt;br&gt;Can be changed: U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min:&lt;br&gt;-200.00 [%]&lt;br&gt;Max: 200.00 [%]</td>
<td>Sets fixed value 5.&lt;br&gt;Refer to: r52405</td>
<td>This value can be interconnected via connector output r52405.</td>
</tr>
<tr>
<td>p50406[0...n]</td>
<td><strong>Fixed value 6 / Fix val 6</strong>&lt;br&gt;DC_CTRL&lt;br&gt;Can be changed: U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min:&lt;br&gt;-200.00 [%]&lt;br&gt;Max: 200.00 [%]</td>
<td>Sets fixed value 6.&lt;br&gt;Refer to: r52406</td>
<td>This value can be interconnected via connector output r52406.</td>
</tr>
<tr>
<td>p50407[0...n]</td>
<td><strong>Fixed value 7 / Fix val 7</strong>&lt;br&gt;DC_CTRL&lt;br&gt;Can be changed: U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min:&lt;br&gt;-200.00 [%]&lt;br&gt;Max: 200.00 [%]</td>
<td>Sets fixed value 7.&lt;br&gt;Refer to: r52407</td>
<td>This value can be interconnected via connector output r52407.</td>
</tr>
<tr>
<td>p50408[0...n]</td>
<td><strong>Fixed value 8 / Fix val 8</strong>&lt;br&gt;DC_CTRL&lt;br&gt;Can be changed: U, T&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min:&lt;br&gt;-200.00 [%]&lt;br&gt;Max: 200.00 [%]</td>
<td>Sets fixed value 8.&lt;br&gt;Refer to: r52408</td>
<td>This value can be interconnected via connector output r52408.</td>
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2 Parameters

2.2 List of parameters

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<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
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<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets fixed value 9.</td>
<td>Dependency:</td>
<td>Refer to: r52409</td>
<td>Note:</td>
<td>This value can be interconnected via connector output r52409.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50410[0...n]</td>
<td>Fixed value 10 / Fix val 10</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets fixed value 10.</td>
<td>Dependency:</td>
<td>Refer to: r52410</td>
<td>Note:</td>
<td>This value can be interconnected via connector output r52410.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50411[0...n]</td>
<td>Fixed value 11 / Fix val 11</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets fixed value 11.</td>
<td>Dependency:</td>
<td>Refer to: r52411</td>
<td>Note:</td>
<td>This value can be interconnected via connector output r52411.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50412[0...n]</td>
<td>Fixed value 12 / Fix val 12</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>FloatingPoint32</td>
<td>DDS, p0180</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-340.28235E36 [%]</td>
<td>340.28235E36 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets fixed value 12.</td>
<td>Dependency:</td>
<td>Refer to: r52412</td>
<td>Note:</td>
<td>This value can be interconnected via connector output r52412.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50413[n]</td>
<td>Sets fixed value 13.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>PERCENT</td>
<td>-340.28235E36 [%] 340.28235E36 [%] 0.00 [%]</td>
</tr>
<tr>
<td>p50414[n]</td>
<td>Sets fixed value 14.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>PERCENT</td>
<td>-340.28235E36 [%] 340.28235E36 [%] 0.00 [%]</td>
</tr>
<tr>
<td>p50415[n]</td>
<td>Sets fixed value 15.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>PERCENT</td>
<td>-340.28235E36 [%] 340.28235E36 [%] 0.00 [%]</td>
</tr>
<tr>
<td>p50416[n]</td>
<td>Sets fixed value 16.</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>PERCENT</td>
<td>-340.28235E36 [%] 340.28235E36 [%] 0.00 [%]</td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 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><strong>p50421[0...n]</strong> Fixed bit 0 / Fixed bit 0</td>
<td>Sets the signal level for fixed bit 0.</td>
<td></td>
<td></td>
<td>This signal can be interconnected via binector output r53230.0.</td>
</tr>
<tr>
<td><strong>p50422[0...n]</strong> Fixed bit 1 / Fixed bit 1</td>
<td>Sets the signal level for fixed bit 1.</td>
<td></td>
<td></td>
<td>This signal can be interconnected via binector output r53230.1.</td>
</tr>
<tr>
<td><strong>p50423[0...n]</strong> Fixed bit 2 / Fixed bit 2</td>
<td>Sets the signal level for fixed bit 2.</td>
<td></td>
<td></td>
<td>This signal can be interconnected via binector output r53230.2.</td>
</tr>
<tr>
<td><strong>p50424[0...n]</strong> Fixed bit 3 / Fixed bit 3</td>
<td>Sets the signal level for fixed bit 3.</td>
<td></td>
<td></td>
<td>This signal can be interconnected via binector output r53230.3.</td>
</tr>
</tbody>
</table>

**DC_CTRL**
- Can be changed: U, T
- Data type: Integer16
- P-Group: -
- Not for motor type: -
- Min: 0
- Max: 1

**Calculation**
- Dyn. index: DDS, p0180
- Unit group: -
- Scaling: -

**Access level**
- 2

**Configuration**
- Func. diagram: 3100
- Unit selection: -
- Expert list: 1

**Expert list**
- 1

**Unit group**
- -

**Unit selection**
- -

**Not for motor type**
- -

**Min**
- 0

**Max**
- 1

**Factory setting**
- 0
### 2 Parameters

#### 2.2 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>p50425[0...n]</td>
<td>Sets the signal level for fixed bit 4.</td>
<td>0: Low, 1: High</td>
<td>Refer to: r53230</td>
<td>This signal can be interconnected via binector output r53230.4.</td>
</tr>
<tr>
<td>p50426[0...n]</td>
<td>Sets the signal level for fixed bit 5.</td>
<td>0: Low, 1: High</td>
<td>Refer to: r53230</td>
<td>This signal can be interconnected via binector output r53230.5.</td>
</tr>
<tr>
<td>p50427[0...n]</td>
<td>Sets the signal level for fixed bit 6.</td>
<td>0: Low, 1: High</td>
<td>Refer to: r53230</td>
<td>This signal can be interconnected via binector output r53230.6.</td>
</tr>
<tr>
<td>p50428[0...n]</td>
<td>Sets the signal level for fixed bit 7.</td>
<td>0: Low, 1: High</td>
<td>Refer to: r53230</td>
<td>This signal can be interconnected via binector output r53230.7.</td>
</tr>
</tbody>
</table>
### 2.2 List of parameters

#### p50430[0...7]
**BI: Fixed setpoint signal source for connector selection / Fix set conn sig s**

<table>
<thead>
<tr>
<th><strong>DC_CTRL</strong></th>
<th><strong>Can be changed:</strong></th>
<th><strong>Calculated:</strong></th>
<th><strong>Access level:</strong></th>
<th><strong>Func. diagram:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>3115</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the selection of the connectors (p50431[0 to 7]).

**Dependency:** Refer to: p50431, p50432, p50680, p50681, r52204, r52209, r52210, r53170

#### p50431[0...7]
**CI: Signal source for fixed setpoint / Fix set sig s**

<table>
<thead>
<tr>
<th><strong>DC_CTRL</strong></th>
<th><strong>Can be changed:</strong></th>
<th><strong>Calculated:</strong></th>
<th><strong>Access level:</strong></th>
<th><strong>Func. diagram:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>3115</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal sources for generating the fixed setpoint (CO: r52204).

**Dependency:** Refer to: p50430, p50432, p50680, p50681, r52204, r52209, r52210, r53170

#### p50432[0...7]
**Fixed setpoint bypass ramp-function generator / Fix set bypass RFG**

<table>
<thead>
<tr>
<th><strong>DC_CTRL</strong></th>
<th><strong>Can be changed:</strong></th>
<th><strong>Calculated:</strong></th>
<th><strong>Access level:</strong></th>
<th><strong>Func. diagram:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>3115</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to enable or disable the impact of the individual fixed setpoints when generating signal r53170.10, "Bypass ramp-function generator".

**Value:**
- 0: Inhibit
- 1: Enable

**Dependency:** Refer to: r53170

**Note:**
- [0] = Enable bypassing of ramp-function generator at fixed setpoint 0
- ... 
- [7] = Enable bypassing of ramp-function generator at fixed setpoint 7

#### p50433[0...n]
**CI: Signal source for default setpoint / Def set sig s**

<table>
<thead>
<tr>
<th><strong>DC_CTRL</strong></th>
<th><strong>Can be changed:</strong></th>
<th><strong>Calculated:</strong></th>
<th><strong>Access level:</strong></th>
<th><strong>Func. diagram:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>3113</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
<td>Scaling: PERCENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td>-</td>
<td>Max</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Max</strong></td>
<td>-</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the default setpoint.

**Value:**
- [0] = Enable bypassing of ramp-function generator at default setpoint 0
- ... 
- [n] = Enable bypassing of ramp-function generator at default setpoint n
2 Parameters

2.2 List of parameters

### p50435[0...7]
**BI: Jog setpoint signal source for connector selection / Jog set conn sig s**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned32 / Binary
- **Dyn. index:** -
- **Func. diagram:** 3125
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal source for the selection of the connectors (p50436[0 to 7]).

### p50436[0...7]
**CI: Signal source for jog setpoint / Jog set sig s**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned32 / FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 3125
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal sources for generating the jog setpoint (CO: r52202).

### p50437[0...7]
**Jog setpoint bypass ramp-function generator / Jog set bypass RFG**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Integer16
- **Dyn. index:** -
- **Func. diagram:** 3125
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** 0
- **Max:** 1
- **Factory setting:** 0

**Description:**
Setting to enable or disable the impact of the individual jog setpoints when generating signal r53170.11, "Bypass ramp-function generator".

**Value:**
- 0: Do not bypass
- 1: Bypass

**Note:**
- [0] = Enable bypassing of ramp-function generator at jog setpoint 0
- ...  
- [7] = Enable bypassing of ramp-function generator at jog setpoint 7

### p50438[0...n]
**CI: Jog signal source for default setpoint / Jog def set sig s**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned32 / FloatingPoint32
- **Dyn. index:** CDS, p0170
- **Func. diagram:** 3125
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Min:** -
- **Max:** 52208[0]

**Description:**
Sets the signal source for the default setpoint when jog is not selected.

### p50440[0...7]
**BI: Creep setpoint signal source for connector selection / Cr set sig s**

- **Can be changed:** T
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned32 / Binary
- **Dyn. index:** -
- **Func. diagram:** 3130
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min:** -
- **Max:** 0

**Description:**
Sets the signal source for the selection of the connectors (p50441[0 to 7]) for the creep setpoint.

**Dependency:**
Refer to: p50441
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50441[0...7]</strong></td>
<td>CI: Signal source for creep setpoint / Cr set sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>P50442[0...7]</strong></td>
<td>Creep setpoint bypass ramp-function generator / Cr set bypass RFG</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td><strong>P50443[0...n]</strong></td>
<td>CI: Creep signal source for default setpoint / Cr def set sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>P50444[0...n]</strong></td>
<td>BI: Creep signal source for shutdown / Cr shutdn sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td><strong>P50445</strong></td>
<td>Creep setpoint level/edge / Cr set lev/ed</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>

**Dependency:**
- Refer to: r52201

**Description:**
- Sets the signal sources for generating the creep setpoint (CO: r52201).

**Value:**
- 0: Do not bypass
- 1: Bypass

**Note:**
- [0]: Enable bypassing of ramp-function generator at creep setpoint 0
- [7]: Enable bypassing of ramp-function generator at creep setpoint 7

**Description:**
- Setting to enable/disable the impact of the individual creep setpoints when generating signal r53170.12, "Bypass ramp-function generator".
- [0...7]: Enable bypassing of ramp-function generator at creep setpoint 0

**Description:**
- Sets the signal source for the default setpoint when creep is not selected.

**Description:**
- Sets the signal source for shutting down/resetting the injection of the creep setpoint.

**Description:**
- Sets whether the ON command is triggered by a logic 1 level or a 0/1 edge.
### Parameters

#### p50460[0...n] Motorized potentiometer activate ramp-function generator / Mot pot act RFG

<table>
<thead>
<tr>
<th>Description</th>
<th>Value:</th>
<th>Description</th>
<th>Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting to activate/de-activate the ramp-function generator on the motorized potentiometer.</td>
<td>0: 1 level</td>
<td>RFG de-activated in automatic mode</td>
<td>1: RFG activated in automatic and manual modes</td>
</tr>
</tbody>
</table>

#### p50461[0...n] CI: Motorized potentiometer signal source for automatic setpoint / MotP aut s sig s

<table>
<thead>
<tr>
<th>Description</th>
<th>Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source for the ramp-function generator's setpoint in automatic mode on the motorized potentiometer.</td>
<td>0: RFG de-activated in automatic mode</td>
</tr>
</tbody>
</table>

#### p50462[0...n] Motorized potentiometer ramp-up time / MotP t_r-up

<table>
<thead>
<tr>
<th>Description</th>
<th>Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the ramp-up time on the motorized potentiometer.</td>
<td>0.01 [s]</td>
</tr>
</tbody>
</table>

#### p50463[0...n] Motorized potentiometer ramp-down time / MotP t_r-dn

<table>
<thead>
<tr>
<th>Description</th>
<th>Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the ramp-down time on the motorized potentiometer.</td>
<td>0.01 [s]</td>
</tr>
</tbody>
</table>

#### p50464[0...n] Motorized potentiometer time difference for dy/dt / MotP t_dif dy/dt

<table>
<thead>
<tr>
<th>Description</th>
<th>Value:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the time difference for the ramp-function generator dy/dt on the motorized potentiometer.</td>
<td>0.01 [s]</td>
</tr>
</tbody>
</table>
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p50465[0...n] Motorized potentiometer expansion factor / MotP exp fact</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong> Can be changed: U, T</td>
</tr>
<tr>
<td>Data type: Integer16</td>
</tr>
<tr>
<td>P-Group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0</td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the expansion factor on the motorized potentiometer.</td>
</tr>
<tr>
<td><strong>Value:</strong></td>
</tr>
<tr>
<td>0: Factor 1</td>
</tr>
<tr>
<td>1: Factor 60</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p50462, p50463, p50464</td>
</tr>
<tr>
<td><strong>Note:</strong> The expansion factor affects the following parameters:</td>
</tr>
<tr>
<td>- p50462 (ramp-up time)</td>
</tr>
<tr>
<td>- p50463 (ramp-down time)</td>
</tr>
<tr>
<td>- p50464 (time difference for dy/dt)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p50466[0...n] CI: Motor potentiometer setting value signal source / MotP s val sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong> Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / 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>
<tr>
<td><strong>Description:</strong> Sets the signal source for the setting value for the motorized potentiometer.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p50472</td>
</tr>
<tr>
<td><strong>Note:</strong> The setting value (CI: p50466) becomes effective on a 0/1 edge of the setting command (BI: p50472).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p50467[0...n] Motorized potentiometer starting value / MotP start value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong> 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>-200.00 [%]</td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the starting value on the motorized potentiometer.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p50473</td>
</tr>
<tr>
<td><strong>Note:</strong> The value is only effective when saving of the output value is de-activated (p50473 = 0).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p50468[0...n] Motorized potentiometer maximum speed / MotP n_max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong> 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>-200.00 [%]</td>
</tr>
<tr>
<td><strong>Description:</strong> Sets the maximum speed on the motorized potentiometer.</td>
</tr>
<tr>
<td><strong>Dependency:</strong> Refer to: p50471</td>
</tr>
</tbody>
</table>
| **Note:** This parameter is only effective in manual mode (p50471 = 0). The setpoint output from the motorized potentiometer is limited to this value.
## Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50469[0...n]</td>
<td><strong>Motorized potentiometer minimum speed / MotP n_min</strong></td>
<td>Can be changed: U, T</td>
<td>This parameter is only effective in manual mode (p50471 = 0). The setpoint output from the motorized potentiometer is limited to this value.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td>Ref to: p50471</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: DCS, p0180</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: PERCENT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50470[0...n]</td>
<td><strong>BI: Motorized potentiometer signal source for CW/CCW / MotP CW/CCW sig s</strong></td>
<td>Can be changed: T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50471[0...n]</td>
<td><strong>BI: Motorized potentiometer signal source for manual/automatic / MotP man/aut sig s</strong></td>
<td>Can be changed: T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50472[0...n]</td>
<td><strong>BI: Motorized potentiometer accept setting value / MotP acc set val</strong></td>
<td>Can be changed: T</td>
<td></td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Calculated: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: CDS, p0170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

#### p50473[0...n]
**Motorized potentiometer save output value / MotP save outp val**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Integer16</td>
<td>2</td>
<td>Sets how the output value is saved on the motorized potentiometer.</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Value:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0: Save de-activated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1: Save activated</td>
</tr>
<tr>
<td>Dependency:</td>
<td></td>
<td></td>
<td><strong>Dependency:</strong> Refer to: p50467, r52240</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If p50473 = 0: The output value (CI: r52240) is not saved. The starting value specified in p50467 is applied after ON.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If p50473 = 1: The output value (CI: r52240) is saved to non-volatile memory after OFF. The saved value is applied after ON.</td>
</tr>
</tbody>
</table>

#### p50480[0...n]
**Oscillation setpoint 1 / Oscillation set 1**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>FloatingPoint32</td>
<td>2</td>
<td>Sets setpoint 1 for the square-wave generator.</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Dependency:</strong> Refer to: p50481, p50482, p50483</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This setpoint is applied for the time set in p50481.</td>
</tr>
</tbody>
</table>

#### p50481[0...n]
**Oscillation setpoint 1 time / Oscill set 1 t**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>FloatingPoint32</td>
<td>2</td>
<td>Sets the time during which setpoint 1 should be applied for the square-wave generator.</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Dependency:</strong> Refer to: p50480, p50482, p50483</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This setpoint is applied for the time set in p50483.</td>
</tr>
</tbody>
</table>

#### p50482[0...n]
**Oscillation setpoint 2 / Oscillation set 2**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Data Type</th>
<th>Access Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>FloatingPoint32</td>
<td>2</td>
<td>Sets setpoint 2 for the square-wave generator.</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Dependency:</strong> Refer to: p50480, p50481, p50483</td>
</tr>
<tr>
<td>Note:</td>
<td></td>
<td></td>
<td><strong>Note:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>This setpoint is applied for the time set in p50483.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Parameter Description</th>
<th>Data Type</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
<th>Access Level</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50483[0...n]</td>
<td>Oscillation setpoint 2 time / Oscill set 2 t</td>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: DDS, p0180</td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>p50484[0...n]</td>
<td>CI: Oscillation signal source for default setpoint / Oscill def set</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: CDS, p0170</td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>p50485[0...n]</td>
<td>BI: Oscillation selection of signal source / Oscill sel sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>p50486</td>
<td>BI: Motor interface signal source for brush length / Mot br l sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Note:**
- BI: p50485 = 0 signal
  - Oscillation is not selected. The default setpoint is applied (CI: p50484).
  - BI: p50485 = 1 signal
  - Oscillation is selected. The square-wave generator is active (p50480, p50481, p50482, p50483).
### p50487
**BI: Motor interface signal source for bearing condition / Mot brg cond sig s**

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32 / Binary</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
</table>

| 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>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for triggering fault F60026 "Bearing condition".

**Dependency:**
- Refer to: r53120
- Refer to: F60026

**Note:**
- The fault is triggered with a delay.
- The signal is available via binector output r53120.1 for further interconnection.

### p50488
**BI: Motor interface signal source for motor fan / Mot mot fan sig s**

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32 / Binary</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
</table>

| 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>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for triggering fault F60027 "Motor fan".

**Dependency:**
- Refer to: r53120
- Refer to: F60027

**Note:**
- The fault is triggered with a delay.
- The signal is available via binector output r53210.0 for further interconnection.

### p50489
**BI: Motor interface signal source for motor temperature / Mot mot temp sig s**

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unsigned32 / Binary</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
</table>

| 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>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for triggering fault F60028 "Motor temperature".

**Dependency:**
- Refer to: r53120
- Refer to: F60028

**Note:**
- The fault is triggered with a delay.
- The signal is available via binector output r53210.3 for further interconnection.

### p50490
**Motor interface temperature sensor / Mot temp sensor**

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>Unit group:</th>
</tr>
</thead>
</table>

| 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>8</td>
<td>0</td>
</tr>
</tbody>
</table>

**Description:** Sets the temperature sensor for monitoring the motor temperature.

**Value:**
- No sensor
- KTY84
- PTC thermistor R_rated 600
- PTC thermistor R_rated 1200
- PTC thermistor R_rated 1330
- PTC thermistor R_rated 2660
### Parameters

#### List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>6: PT100</td>
<td>Sets the alarm threshold for monitoring the motor temperature.</td>
<td>The parameter is only valid for the following temperature sensors with a continuous characteristic: - KTY84 (p50490 = 1) - PT100 (p50490 = 6) - NTC thermistor K227 (p50490 = 7) - PT1000 (p50490 = 8)</td>
<td>The evaluation electronics on the CUD only allow resistance values of less than approx. 2 kOhm to be measured. As a consequence, only temperatures greater than approx. 90 °C can be measured when using these temperature sensors. For lower temperatures, the lowest possible value (approx. 90 °C) is displayed.</td>
</tr>
<tr>
<td>7: NTC thermistor K227</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8: PT1000</td>
<td>Sets the fault threshold for monitoring the motor temperature.</td>
<td>The parameter is only valid for the following temperature sensors with a continuous characteristic: - KTY84 (p50490 = 1) - PT100 (p50490 = 6) - NTC thermistor K227 (p50490 = 7) - PT1000 (p50490 = 8)</td>
<td>The evaluation electronics on the CUD only allow resistance values of less than approx. 2 kOhm to be measured. As a consequence, only temperatures greater than approx. 90 °C can be measured when using these temperature sensors. For lower temperatures, the lowest possible value (approx. 90 °C) is displayed.</td>
</tr>
</tbody>
</table>

#### p50491[0...n]

**Motor interface alarm threshold for temperature monitoring / Mot_temp al thr**

<table>
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<tr>
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<th>Access level</th>
<th>Function diagram</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
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#### p50492[0...n]

**Motor interface fault threshold for temperature monitoring / Mot_temp flt thr**

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<tr>
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<td>200 [°C]</td>
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<td>Factory setting</td>
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### 2 Parameters

#### 2.2 List of parameters

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<tr>
<td>p50500[0...n]</td>
<td>Torque limiting signal source for t_set in slave mode / T_set s mode sig s</td>
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<td>-</td>
<td>-</td>
<td>52170[0]</td>
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| Description: | Sets the signal source for the torque setpoint in slave mode. |

| p50501[0...n] | Torque limiting signal source for torque additional setpoint / T_lim add s sig s | Can be changed: T | Refer to: p50500 |
| DC_CTRL | Calculated: - | Access level: 2 |
| Data type: Unsigned32 / FloatingPoint32 | Dyn. index: CDS, p0170 | Func. diagram: 6830 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| - | - | 0 |

| Description: | Sets the signal source for the torque additional setpoint in torque limiting. The value is injected in addition to friction and moment of inertia compensation. |

| p50502 | Speed controller additional setpoint signal source / Add set sig s | Can be changed: T | Refer to: p50500 |
| DC_CTRL | Calculated: - | Access level: 2 |
| Data type: Unsigned32 / FloatingPoint32 | Dyn. index: - | Func. diagram: 6815 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| - | - | 0 |

| Description: | Sets the signal source for the additional setpoint of the speed controller. This value is added to the speed controller's output value. |

| p50503[0...n] | Torque limiting t_set factor in slave mode / T_set fact sl mode | Can be changed: U, T | Refer to: p50500 |
| DC_CTRL | Calculated: - | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: DDS, p0180 | Func. diagram: 6830 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| -300.00 [%] | 300.00 [%] | 100.00 [%] |

| Description: | Sets the factor for the torque setpoint in slave mode. |

| p50509 | Speed limiting controller signal source for speed actual value / n_lim n_act sig s | Can be changed: T | Refer to: p50500 |
| DC_CTRL | Calculated: - | Access level: 2 |
| Data type: Unsigned32 / FloatingPoint32 | Dyn. index: - | Func. diagram: 6835 |
| P-Group: - | Unit group: - | Unit selection: - |
| Not for motor type: - | Scaling: PERCENT | Expert list: 1 |
| Min | Max | Factory setting |
| - | - | 52167[0] |

| Description: | Sets the signal source for the speed actual value (n_act) on the speed limiting controller. |
### 2 Parameters

#### 2.2 List of parameters

<table>
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<tr>
<th>Parameter</th>
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<th>Access level</th>
<th>Dependency</th>
<th>Note</th>
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<tr>
<td>p50510</td>
<td>CI: Speed limiting controller signal source for pos torque limit / ( T ) lim pos sig s</td>
<td>DC_CTRL</td>
<td>T</td>
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<td>Refer to: r52136</td>
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<td>This parameter specifies which parameter is to be injected as the limit value for torque limiting 1 (r52136).</td>
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<tr>
<td>p50511</td>
<td>CI: Speed limiting controller signal source for neg torque limit / ( T ) lim neg sig s</td>
<td>DC_CTRL</td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>Refer to: r52137</td>
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<td>This parameter specifies which parameter is to be injected as the limit value for torque limiting 2 (r52137).</td>
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<tr>
<td>p50512[0...n]</td>
<td>Speed limiting controller max speed pos direction of rotation / ( n_{\text{max pos dir rot}} )</td>
<td>DC_CTRL</td>
<td>U, T</td>
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<td></td>
<td>Sets the maximum speed for the positive direction of rotation on the speed limiting controller.</td>
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<tr>
<td>p50513[0...n]</td>
<td>Speed limiting controller max speed neg direction of rotation / ( n_{\text{max neg dir}} )</td>
<td>DC_CTRL</td>
<td>U, T</td>
<td>-</td>
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<td></td>
<td>Sets the maximum speed for the negative direction of rotation on the speed limiting controller.</td>
</tr>
<tr>
<td>p50515[0...n]</td>
<td>Speed limiting controller P gain / ( \text{n}_{\text{lim Kp}} )</td>
<td>DC_CTRL</td>
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<td>Sets the P gain on the speed limiting controller.</td>
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</table>
### 2 Parameters

#### 2.2 List of parameters

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<th>Parameter</th>
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<th>Index</th>
<th>Note</th>
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<tbody>
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<td>p50519[0...1]</td>
<td>CI: Input signal for friction compensation / Fric comp inp sig</td>
<td>DC_CTRL</td>
<td>Sets the signal sources for friction compensation.</td>
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<tr>
<td>[0]</td>
<td>[1]</td>
<td>[0]</td>
<td>[1] = Absolute</td>
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<tr>
<td></td>
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<td></td>
<td>The signals in p50519[0] and p50519[1] are summed and applied to the friction compensation input.</td>
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<tr>
<td>p50520[0...n]</td>
<td>Friction compensation 0 % speed / Fric comp n 0%</td>
<td>DC_CTRL</td>
<td>Sets friction compensation at 0 % speed.</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>In the case of operation in both directions of rotation, this basic value should be set to 0% to prevent the armature current from oscillating.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>The basic values for friction compensation (p50520 ... p50530) are set automatically during the optimization run for friction compensation (p50051 = 28).</td>
</tr>
<tr>
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<td>There is linear interpolation between the basic values; here, the friction compensation value takes on the input signal's sign.</td>
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<td>p50521[0...n]</td>
<td>Friction compensation 10 % speed / Fric comp n 10%</td>
<td>DC_CTRL</td>
<td>Sets friction compensation at 10 % speed.</td>
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<td>p50522[0...n]</td>
<td>Friction compensation 20 % speed / Fric comp n 20%</td>
<td>DC_CTRL</td>
<td>Sets friction compensation at 20 % speed.</td>
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### Parameters

#### Friction compensation

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<th>P-Group</th>
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<th>Unit selection</th>
<th>Function diagram</th>
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<td>Friction compensation 80 % speed / Fric comp n 80%</td>
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<td>-</td>
<td>PERCENT</td>
<td>DDS, p0180</td>
<td>-</td>
<td>6820</td>
<td>-</td>
<td>-</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50529</td>
<td>Friction compensation 90 % speed / Fric comp n 90%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>DDS, p0180</td>
<td>-</td>
<td>6820</td>
<td>-</td>
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<tr>
<td>p50530</td>
<td>Friction compensation 100% speed / Fric comp n 100%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>DDS, p0180</td>
<td>-</td>
<td>6820</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td>p50540</td>
<td>Speed controller acceleration time / n_ctr t_accel</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DDS, p0180</td>
<td>-</td>
<td>6820</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>p50541</td>
<td>Speed controller setpoint/actual value difference factor / Set/act dif fact</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>DDS, p0180</td>
<td>-</td>
<td>6820</td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Description:**
- Sets friction compensation at 80% speed.
- Sets friction compensation at 90% speed.
- Sets friction compensation at 100% speed.
- This basic value is also effective at speeds > 100%.

**Dependency:**
- Refer to: r52150, r52174

**Note:**
- The acceleration time is the time which would be needed to accelerate the drive from 0 to 100% of the maximum speed at 100% device rated current (with no friction present). It is a measure of the moment of inertia at the motor shaft.
- The acceleration time is set automatically during the optimization run for the speed controller (p50051 = 26).

**Expert list:**
- 1

**Factory setting:**
- 0.0 [s] 1000.00 [s] 0.01 [s]

**Minimum:**
- 0.00 [s]

**Maximum:**
- 650.00 [s]

**Range:**
- 0.00 - 650.00
In the case of the "Acceleration dependent upon setpoint/actual value difference" function, only the proportion of the speed controller's setpoint/actual value difference which has an absolute value in excess of the threshold (p50543) is switched through.

Dependency: Refer to: p50543

<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>p50542</td>
<td>RFG dy/dt time difference / RFG dy/dt t_dif</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>0.00 [s]</td>
<td>1000.00 [s]</td>
<td>0.01 [s]</td>
</tr>
<tr>
<td></td>
<td>Sets the dt for the output of dy/dt in r52191.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The change in the ramp-function generator's output variable (p52190) in relation to the time set in p50542 is output in r52191.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example: A ramp-up time of 5 s is set on the ramp-function generator; in other words, a complete ramp-up from y = 0% to 100% will take 5 s.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>A time difference dt of 2 s is set in p50542. This results in a dy/dt of 40% at r52191, since the set dt of 2s produces a dy of (2 s / 5 s) * 100% = 40%.</td>
<td></td>
<td></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>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50543</td>
<td>Speed controller setpoint/actual value difference threshold / Set/act dif thresh</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td>0.00 [%]</td>
</tr>
<tr>
<td></td>
<td>Sets the threshold for acceleration dependent upon the setpoint/actual value difference.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In the case of the &quot;Acceleration dependent upon setpoint/actual value difference&quot; function, only the proportion of the speed controller's setpoint/actual value difference which has an absolute value in excess of the threshold (p50543) is switched through.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Example:</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<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>p50546</td>
<td>Smoothing time constant for inertia compensation / Comp inert T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>0.00 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
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<tr>
<td></td>
<td>Sets the smoothing time constant for the acceleration value for moment of inertia compensation.</td>
<td></td>
<td></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>P-Group</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50550</td>
<td>Speed controller adaptation Kp y coordinate 1 / Adapt Kp y1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>0.10</td>
<td>2000.00</td>
<td>3.00</td>
</tr>
<tr>
<td></td>
<td>Sets the y coordinate for pair of values 1 for adaptation of the P gain (Kp).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Note:**
This P gain (Kp) is effective up to x coordinate 1 (p50556).
The adaptation of the P gain (Kp) is defined using 2 pairs of values.

Pair of values 1:
p50556/p50550 (x/y coordinate)
Pair of values 2:
p50559/p50225 (x/y coordinate)

<table>
<thead>
<tr>
<th>p50551[0...n]</th>
<th>Speed controller adaptation Tn y coordinate 1 / Adapt Tn y1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td>Dyn. index: DDS, p0180</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0.010 [s]</td>
<td>Max</td>
</tr>
<tr>
<td>10.000 [s]</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.650 [s]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the y coordinate for pair of values 1 for adaptation of the integral time (Tn).

**Note:**
This integral time (Tn) is effective up to x coordinate 1 (p50557).
The adaptation of the integral time (Tn) is defined using 2 pairs of values.

Pair of values 1:
p50557/p50551 (x/y coordinate)
Pair of values 2:
p50560/p50226 (x/y coordinate)

<table>
<thead>
<tr>
<th>p50552[0...3]</th>
<th>Speed controller adaptation droop y coordinate 1 / Adapt droop y1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -</td>
</tr>
<tr>
<td>0.000</td>
<td>Max</td>
</tr>
<tr>
<td>10.000</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the y coordinate for pair of values 1 for adaptation of the droop.

**Notice:**
- For the droop, generally values up to 10 % are practical (p50552 = 0.000 ... 0.100). Under certain circumstances, higher values can result in an unstable response of the speed controller.
- The droop is entered as absolute factor without any dimensions and it is especially important to note that it is not a percentage.

Example:
Set droop = 5 % --> p50552 = 0.05

**Note:**
This droop is effective up to x coordinate 1 (p50558).
The adaptation of the droop is defined using 2 pairs of values.

Pair of values 1:
p50558/p50552 (x/y coordinate)
Pair of values 2:
p50561/p50227 (x/y coordinate)

<table>
<thead>
<tr>
<th>p50553[0...n]</th>
<th>CI: Speed controller adaptation Kp signal source / Adapt Kp sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: T</td>
</tr>
<tr>
<td><strong>Data type:</strong> Unsigned32 / FloatingPoint32</td>
<td>Calculated: -</td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>-</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the P gain (Kp) on the speed controller.
### 2 Parameters
#### 2.2 List of parameters

**p50554[0...n]**

**Cl: Speed controller adaptation Tn signal source / Adapt Tn sig s**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>T</td>
<td>Sets the signal source for the integral time (Tn) on the speed controller.</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32 / FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
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<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
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</tr>
<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dyn. index</td>
<td>CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>Unit group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
Sets the signal source for the integral time (Tn) on the speed controller.

**p50555[0...n]**

**Cl: Speed controller adaptation droop signal source / Adapt droop sig s**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>T</td>
<td>Sets the signal source for the droop on the speed controller.</td>
</tr>
<tr>
<td>Data type</td>
<td>Unsigned32 / FloatingPoint32</td>
<td></td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
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</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>-</td>
<td></td>
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<tr>
<td>Max</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dyn. index</td>
<td>CDS, p0170</td>
<td></td>
</tr>
<tr>
<td>Unit group</td>
<td>-</td>
<td></td>
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<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
A setting of 10% droop means that at 100% controller output (100% torque or current setpoint), the speed will deviate from the setpoint by 10% ("softening" of closed-loop control).

**p50556[0...n]**

**Speed controller adaptation Kp x coordinate 1 / Adapt Kp x1**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Sets the x coordinate for pair of values 1 for adaptation of the P gain (Kp).</td>
</tr>
<tr>
<td>Data type</td>
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</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>100.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Dyn. index</td>
<td>DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>Unit group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the x coordinate for pair of values 1 for adaptation of the P gain (Kp).

**Notice:**
The following condition applies for x coordinate 1/2:
p50556 < p50559

**Note:**
The adaptation of the P gain (Kp) is defined using 2 pairs of values.
Pair of values 1:
p50556/p50550 (x/y coordinate)
Pair of values 2:
p50559/p50225 (x/y coordinate)

**p50557[0...n]**

**Speed controller adaptation Tn x coordinate 1 / Adapt Tn x1**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed</td>
<td>U, T</td>
<td>Sets the x coordinate for pair of values 1 for adaptation of the integral time (Tn).</td>
</tr>
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<td>Data type</td>
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<tr>
<td>P-Group</td>
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<td></td>
</tr>
<tr>
<td>Not for motor type</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>100.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Access level</td>
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<td></td>
</tr>
<tr>
<td>Dyn. index</td>
<td>DDS, p0180</td>
<td></td>
</tr>
<tr>
<td>Unit group</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Scaling</td>
<td>PERCENT</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td>0.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the x coordinate for pair of values 1 for adaptation of the integral time (Tn).

**Notice:**
The following condition applies for x coordinate 1/2:
p50557 < p50560

**Note:**
The adaptation of the integral time (Tn) is defined using 2 pairs of values.
Pair of values 1:
p50557/p50551 (x/y coordinate)
Pair of values 2:
p50560/p50226 (x/y coordinate)
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Notice</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50558[0...3]</td>
<td><strong>Speed controller adaptation droop x coordinate 1 / Adapt droop x1</strong></td>
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<td>Access level: 2</td>
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<tr>
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<td>Dyn. index: -</td>
<td>Func. diagram: 6805</td>
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</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the x coordinate for pair of values 1 for adaptation of the droop.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>The following condition applies for x coordinate 1/2: p50558 &lt; p50561</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The adaptation of the droop is defined using 2 pairs of values.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pair of values 1: p50558/p50552 (x/y coordinate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pair of values 2: p50561/p50227 (x/y coordinate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50559[0...n]</td>
<td><strong>Speed controller adaptation Kp x coordinate 2 / Adapt Kp x2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC_CTRL</td>
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<td>Access level: 2</td>
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<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 6805</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the x coordinate for pair of values 2 for adaptation of the P gain (Kp).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>The following condition applies for x coordinate 1/2: p50556 &lt; p50559</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The adaptation of the P gain (Kp) is defined using 2 pairs of values.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pair of values 1: p50556/p50550 (x/y coordinate)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pair of values 2: p50559/p50225 (x/y coordinate)</td>
<td></td>
<td></td>
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<tr>
<td>p50560[0...n]</td>
<td><strong>Speed controller adaptation Tn x coordinate 2 / Adapt Tn x2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>Func. diagram: 6805</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the x coordinate for pair of values 2 for adaptation of the integral time (Tn).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notice:</strong></td>
<td>The following condition applies for x coordinate 1/2: p50557 &lt; p50560</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The adaptation of the integral time (Tn) is defined using 2 pairs of values.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pair of values 1: p50557/p50551 (x/y coordinate)</td>
<td></td>
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<tr>
<td></td>
<td>Pair of values 2: p50560/p50226 (x/y coordinate)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**p50561[0...n]**  
**Speed controller adaptation droop x coordinate 2 / Adapt droop x2**

- **DC_CTRL**
- **Can be changed:** U, T  
- **Calculated:** -  
- **Access level:** 2
- **Data type:** FloatingPoint32  
- **Dyn. index:** DDS, p0180
- **Unit group:** -  
- **Unit selection:** -
- **Not for motor type:** -  
- **Scaling:** PERCENT
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the x coordinate for pair of values 2 for adaptation of the droop.

**Notice:**
The following condition applies for x coordinate 1/2:
\[ p50558 < p50561 \]

**Note:**
The adaptation of the droop is defined using 2 pairs of values.
Pair of values 1:
\[ p50558/p50552 \] (x/y coordinate)
Pair of values 2:
\[ p50561/p50227 \] (x/y coordinate)

**p50562[0...n]**  
**Speed controller droop positive limiting / Droop pos lim**

- **DC_CTRL**
- **Can be changed:** U, T  
- **Calculated:** -  
- **Access level:** 2
- **Data type:** FloatingPoint32  
- **Dyn. index:** DDS, p0180
- **Unit group:** -  
- **Unit selection:** -
- **Not for motor type:** -  
- **Scaling:** PERCENT
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets positive limiting for the droop on the speed controller.

**Dependency:**
Refer to: p50563

**p50563[0...n]**  
**Speed controller droop negative limiting / Droop neg lim**

- **DC_CTRL**
- **Can be changed:** U, T  
- **Calculated:** -  
- **Access level:** 2
- **Data type:** FloatingPoint32  
- **Dyn. index:** DDS, p0180
- **Unit group:** -  
- **Unit selection:** -
- **Not for motor type:** -  
- **Scaling:** PERCENT
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets negative limiting for the droop on the speed controller.

**Dependency:**
Refer to: p50562

**p50565**  
**Speed controller optimization frequency response plot base speed / f_plot n_base**

- **DC_CTRL**
- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 2
- **Data type:** FloatingPoint32  
- **Dyn. index:** -
- **Unit group:** -  
- **Unit selection:** -
- **Not for motor type:** -  
- **Scaling:** PERCENT
- **Min**  
- **Max**  
- **Factory setting**

**Description:**
Sets the base speed for the frequency response plot for the optimization run "Speed control optimization for drives that are capable of oscillation" (p50051 = 29).

**Dependency:**
Refer to: p50566, p50567
2 Parameters
2.2 List of parameters

---

**p50566**  
**Speed controller optimization frequency response plot amplitude / f_plot amplitude**  
**DC_CTRL**  
*Can be changed: T  Calculated: -  Access level: 2*

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1

**Min:** Max  
0.01 [%]  
5.00 [%]  
1.00 [%]

**Description:**  
Sets the amplitude for the frequency response plot for the optimization run "Speed control optimization for drives that are capable of oscillation" (p50051 = 29).

---

**p50567**  
**Speed controller optimization frequency response plot time / f_plot time**  
**DC_CTRL**  
*Can be changed: T  Calculated: -  Access level: 2*

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** Max  
0.30 [s]  
3.00 [s]  
1.00 [s]

**Description:**  
Sets the time for the frequency response plot for the optimization run "Speed control optimization for drives that are capable of oscillation" (p50051 = 29).

**Note:**  
In this case, an average is generated over the time set here per measuring frequency.

For the 3.0 s setting, it takes approximately 9 minutes to plot the frequency response.

---

**p50570[0...n]**  
**Adaptation armature current controller changeover input / Adapt Ia chgov inp**  
**DC_CTRL**  
*Can be changed: U, T  Calculated: -  Access level: 2*

**Data type:** Integer16  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** Max  
0  
1  
0

**Description:**  
Sets the input quantity for armature current controller adaptation.

**Value:**  
0:  
1: Ia_act r52117  
Ia_set r52119

**Dependency:**  
Refer to: p50571, p50572

---

**p50571[0...n]**  
**Adaptation armature current controller non-linear L activation / Adapt N_lin L act**  
**DC_CTRL**  
*Can be changed: U, T  Calculated: -  Access level: 2*

**Data type:** Integer16  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1

**Min:** Max  
0  
1  
0

**Description:**  
Setting to activate the adaptation of non-linear inductances for the armature current controller.

**Value:**  
0:  
1: Adaptation non-linear L active  
Fixed value 100 % effective

**Dependency:**  
Refer to: p50570, p50572, r52350
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50572[0...n]</td>
<td>Adapt arm curr controller intermittent adapt activation / Adapt Interm Act</td>
<td>Can be changed: U, T</td>
<td>Can be changed: U, T</td>
</tr>
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<td></td>
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<td>P-Group: -</td>
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<td></td>
<td></td>
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<td>Not for motor type: -</td>
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<td>Min</td>
</tr>
<tr>
<td></td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Setting to activate the intermittent adaptation for the armature current controller.</td>
<td>Value: 0: Intermittent adaptation effective</td>
<td>Value: 0: Intermittent adaptation effective</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dependancy: Refer to: p50570, p50571, r52350</td>
<td></td>
</tr>
<tr>
<td>p50573[0...n]</td>
<td>Adaptation armature current controller limiting / Adapt Ia_ctrl lim</td>
<td>Can be changed: U, T</td>
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<td>P-Group: -</td>
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<td>Min</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1.0 [%]</td>
<td>1.0 [%]</td>
</tr>
<tr>
<td></td>
<td>Setting to limit the armature current controller adaptation.</td>
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<td></td>
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<tr>
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<td></td>
<td>Dependancy: Refer to: p50571, p50572, r52350</td>
<td></td>
</tr>
<tr>
<td>p50574[0...n]</td>
<td>Adapt arm curr controller intermittent adapt Kp increase / Ad Internm Kp incr</td>
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<td>Can be changed: U, T</td>
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<td></td>
<td></td>
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<td>P-Group: -</td>
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<td></td>
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<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>Sets the Kp increase for the intermittent adaptation for the armature current controller.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dependancy: Refer to: p50572</td>
<td></td>
</tr>
<tr>
<td>p50575[0...n]</td>
<td>Adaptation field current controller changeover input / Adapt If chgov inp</td>
<td>Can be changed: U, T</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Sets the input variable for the field current controller adaptation.</td>
<td>Value: 0: If_act r52265</td>
<td>Value: 0: If_act r52265</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dependancy: Refer to: p50576, p50577</td>
<td></td>
</tr>
<tr>
<td>p50576[0...n]</td>
<td>Adaptation field current controller non-linear L activation / Adapt n_lin act</td>
<td>Can be changed: U, T</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Not for motor type: -</td>
</tr>
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<td></td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Setting to activate the adaptation of non-linear inductances for the field current controller.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
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<tbody>
<tr>
<td>p50577[n]</td>
<td>Adapt field curr controller non-linear gating unit activation</td>
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<td>Adaptation non-linear L active</td>
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<td></td>
<td></td>
<td>1</td>
<td>Fixed value 100 % effective</td>
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<tr>
<td>p50578[n]</td>
<td>Adaptation field current controller limiting</td>
<td>0</td>
<td>Adaptation gating unit effective</td>
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<tr>
<td></td>
<td></td>
<td>1</td>
<td>Fixed value 100 % effective</td>
</tr>
<tr>
<td></td>
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<tr>
<td>p50580[n]</td>
<td>BI: Field reversal direction of rotation signal source</td>
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<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
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<tr>
<td>p50581[n]</td>
<td>BI: Field reversal braking signal source</td>
<td>0</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td></td>
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</tbody>
</table>

---

**Value:**
- 0: Adaptation non-linear L active
- 1: Fixed value 100 % effective

**Dependency:**
- Refer to: p50575, p50576, r52355

### Description:
Activates the adaptation to the non-linearity of the gating unit for the field current controller.

**Value:**
- 0: Adaptation gating unit effective
- 1: Fixed value 100 % effective

**Dependency:**
- Refer to: p50575, p50576, r52355

### Description:
Setting to limit the field current controller adaptation.

**Value:**
- 0: Adaptation gating unit effective
- 1: Fixed value 100 % effective

**Dependency:**
- Refer to: p50575, p50576, r52355

### Description:
Sets the signal source for the direction of rotation for the "field reversal" function.

**Value:**
- 0 signal:
  - Positive field direction is selected (r53195.0 = 1, r53195.1 = 0).
  - The speed actual value is not inverted.
- 1 signal:
  - Negative field direction is selected (r53195.0 = 0, r53195.1 = 1).
  - The speed actual value is inverted.

**Dependency:**
- Refer to: p50576, p50577, r52355

### Description:
Sets the signal source for the "field reversal braking" function.

**Value:**
- 0/1 signal:
  - Reversal of the field direction (this has a braking effect).
  - At n < n_min, the original field direction is selected again. The drive goes into operating state o7.2.
### 2 Parameters

#### 2.2 List of parameters

**p50583[0...n]**  
Cl: Field reversal speed actual value signal source / FldRev n_act sig s  
**Dependency:** Refer to: p50092, p50580, p50583, r53195

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<td>Scaling: PERCENT</td>
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</tr>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>52167[0]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the speed actual value when reversing the field.  
**Dependency:** Refer to: p50092, p50580, p50581, r53195

**p50590**  
Cl: Messages for set/act val dev 1 signal source for speed setpoint / Msg dev1 set sig s  
**Dependency:** Refer to: p50092, p50580, p50581, r53195

<table>
<thead>
<tr>
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<th>Can be changed: T</th>
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</tr>
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<td>Unit selection: -</td>
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<td>-</td>
<td>52165[0]</td>
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</tbody>
</table>

**Description:** Sets the signal source for the speed setpoint for the "Setpoint/actual value deviation 1" message.  
**Dependency:** Refer to: F60031

**p50591**  
Cl: Messages for set/act val dev 1 signal source for speed act val / Msg dev1 act sig s  
**Dependency:** Refer to: F60031

<table>
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<tr>
<th>DC_CTRL</th>
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<td>P-Group: -</td>
<td>Unit group: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
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</tr>
</tbody>
</table>

**Description:** Sets the signal source for the speed actual value for the "Setpoint/actual value deviation 1" message.  
**Dependency:** Refer to: p50590, r53025

**p50592**  
Cl: Messages for ref speed signal source for speed actual value / Msg ref act sig s  
**Dependency:** Refer to: r53025

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<tr>
<th>DC_CTRL</th>
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<th>Calculated: -</th>
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</tr>
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<td>Func. diagram: 8020</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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</table>

**Description:** Sets the signal source for the speed actual value for the "Reference speed reached" message.  
**Dependency:** Refer to: r53025
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
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</thead>
<tbody>
<tr>
<td>p50593</td>
<td>Cl: Messages for speed less than min speed signal source for act val / Msg n&lt;n_min sig s</td>
<td>Sets the signal source for the &quot;Speed less than minimum speed&quot; message.</td>
</tr>
<tr>
<td>p50594[0...n]</td>
<td>Cl: Messages polarity speed setpoint signal source / MsgPol n_set S_src</td>
<td>Sets the signal source for the &quot;Speed setpoint polarity&quot; message.</td>
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<tr>
<td>p50595</td>
<td>Cl: Signal source for overspeed messages / Msg n_over sig s</td>
<td>Sets the signal source for the speed actual value for the overspeed message.</td>
</tr>
<tr>
<td>p50596</td>
<td>Cl: Messages for set/act val dev 2 signal source for speed setpoint / Msg dev2 set sig s</td>
<td>Sets the signal source for the speed setpoint for the &quot;Setpoint/actual value deviation 2&quot; message.</td>
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<tr>
<td>p50597</td>
<td>Cl: Messages for set/act val dev 2 signal source for speed act val / Msg dev2 act sig s</td>
<td>Sets the signal source for the speed actual value for the &quot;Setpoint/actual value deviation 2&quot; message.</td>
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2 Parameters

2.2 List of parameters

### p50598[0...n]
**C1: Messages polarity speed actual value signal source / MsgPol n_act S_src**

- **Dependency:** Refer to: p50596, r53025
- **Description:** Sets the signal source for the "Speed actual value polarity" message.

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<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
<th>Description</th>
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<td>Sets the signal source for the &quot;Speed actual value polarity&quot; message.</td>
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<td>DC_CTRL</td>
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</tbody>
</table>

| Data type: | Unsigned32 / FloatingPoint32 |
| Dyn. index: | CDS, p0170 |
| P-Group: | - |
| Not for motor type: | - |
| Min | - |
| Max | - |
| Access level: | 2 |
| Func. diagram: | 8025 |
| Unit selection: | - |
| Expert list: | 1 |
| Factory setting | 52179[0] |

### p50600[0...4]
**C1: Signal source for armature gating unit input / A g unit in sig s**

- **Dependency:** Refer to: p50372, r53025
- **Description:** Sets the signal source for the gating unit input on the armature circuit.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50600[0...4]</td>
<td></td>
<td></td>
<td>Sets the signal source for the gating unit input on the armature circuit.</td>
</tr>
<tr>
<td>DC_CTRL</td>
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<td></td>
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</tbody>
</table>

| Data type: | Unsigned32 / FloatingPoint32 |
| Dyn. index: | - |
| P-Group: | - |
| Not for motor type: | - |
| Min | - |
| Max | - |
| Access level: | 3 |
| Func. diagram: | 6855, 6860 |
| Unit selection: | - |
| Expert list: | 1 |
| Factory setting | [0] 52102[0] [1...4] 0 |

### p50601[0...5]
**C1: Signal source for speed limiting controller setpoint / n_lim set sig s**

- **Dependency:** Refer to: p50372, r53025
- **Description:** Sets the signal source for the setpoint on the armature current controller.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50601[0...5]</td>
<td></td>
<td></td>
<td>Sets the signal source for the setpoint on the armature current controller.</td>
</tr>
<tr>
<td>DC_CTRL</td>
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<td></td>
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</tbody>
</table>

| Data type: | Unsigned32 / FloatingPoint32 |
| Dyn. index: | - |
| P-Group: | - |
| Not for motor type: | - |
| Min | - |
| Max | - |
| Access level: | 3 |
| Func. diagram: | 6835, 6840, 6855 |
| Unit selection: | - |
| Expert list: | 1 |

**Notice:**
Re index 5:
When entering a supplementary current setpoint via p50601[5] it is not permissible to use the current setpoint integrator or the reduced gearbox load function. p50158 must be set = 0.000 s.
Possible effect if this is not observed:
Torque direction change will not be able to be completed. The drive remains in one torque direction.

**Note:**
[0 to 1] = Speed limiting controller
Sets the signal sources for the setpoint on the speed limiting controller. The two values are added together.
[2 to 3] = Current limitation
Sets the signal sources for the setpoint on the current controller (before current limitation). The two values are added together.
[4 to 5] = Closed-loop current control
Sets the signal sources for the setpoint on the current controller (before the current controller). The two values are added together. The absolute value is generated from the value in index 5.
### 2 Parameters

**2.2 List of parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit selection</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit selection</th>
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<td>DC_CTRL</td>
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<td>Access level: 3</td>
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<td>Unit group: -</td>
<td>Scaling: PERCENT</td>
<td>Max</td>
<td>Factory setting</td>
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<td>Sets the signal source for the armature current actual value for closed-loop armature current control.</td>
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<td>CI: Current limitation current limit torque direction I / I_lim I_lim t d I</td>
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<td>Selects which parameter is injected as the current limit in torque direction I for quick stop or shutdown.</td>
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<td>Scaling: +100% corresponding to r50072[1].</td>
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<td>Selects which parameter is injected as the variable current limit in torque direction II.</td>
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<td>Scaling: +100% corresponding to p50100 * p50171.</td>
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<td>About [4]:</td>
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<td>Selects which parameter is injected as the current limit in torque direction II for quick stop or shutdown.</td>
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</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**About [5]:**
Selects which parameter is injected as the variable current limit in torque direction II.
Scaling: +100% corresponding to r50072[1].

**About [6]:**
Selects which parameter is injected as the current limit in torque direction II for quick stop or shutdown.
Scaling: +100% corresponding to r50072[1].

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
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<tbody>
<tr>
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<td>CI: Torque limiting signal source for positive torque limit / T lim pos sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>Min</td>
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<td></td>
<td>Factory setting: 52002[0]</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the variable positive torque limit.

**Note:**
Scaling:

- [0 to 3] = 100% of the parameter value corresponds to the positive system torque limit according to \( I_a = p50171 \).
- [4] = 100% of the parameter value corresponds to the positive torque limit according to \( I_a = r50072[1] \).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50606[0...4]</td>
<td>CI: Torque limiting signal source for negative torque limit / T lim neg sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td></td>
<td></td>
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<td>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td></td>
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<td>Min</td>
<td>Max</td>
<td>Scaling: PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for the variable negative torque limit.

**Note:**
Scaling:

- [0 to 3] = 100% of the parameter value corresponds to the negative system torque limit according to \( I_a = p50171 \).
- [4] = 100% of the parameter value corresponds to the negative torque limit according to \( I_a = r50072[1] \).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50607[0...n]</td>
<td>CI: Torque limiting signal source for master drive t_set / Mst tq set sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
</tr>
<tr>
<td></td>
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<td>Dyn. index: CDS, p0170</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td>Factory setting: 52148[0]</td>
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</table>

**Description:** Sets the signal source for the variable positive torque setpoint.

<table>
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<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Unit group</th>
<th>Unit selection</th>
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</thead>
<tbody>
<tr>
<td>p50608</td>
<td>CI: Auto-reversing stage signal source for torque direction setpoint / Tqe dir set sig s</td>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<td>Factory setting: 52119[0]</td>
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**Description:** Sets the signal source for the torque direction setpoint for the auto-reversing stage.
### 2 Parameters

#### 2.2 List of parameters

<table>
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<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Data type</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
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<tbody>
<tr>
<td>p50609[0...n]</td>
<td><strong>Cl: Signal source for speed controller actual value / n_ctr act sig s</strong></td>
<td>Sets the signal source for the actual value on the speed controller.</td>
<td>Refer to: p50083</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
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<tr>
<td>p50610</td>
<td><strong>Cl: Signal source for field gating unit input value / Field g unit sig s</strong></td>
<td>Sets the signal source for the input value on the field gating unit.</td>
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<td>Can be changed: T</td>
<td>Calculated: -</td>
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<td>Func. diagram: 6915</td>
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<td><strong>Cl: Field curr setp limiting setpoint sig source / If_lim set sig s</strong></td>
<td>Sets the signal sources for generating the field current setpoint (CO: r52275).</td>
<td>Refer to: r52275</td>
<td>Can be changed: T</td>
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<td>Func. diagram: 6905</td>
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<td>Max</td>
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<td>Factory setting</td>
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<td>p50612[0...1]</td>
<td><strong>Cl: Ci-loop field current ctrl sig source for field current act val / If_ctr If_ac sig s</strong></td>
<td>Sets the signal source for the field current actual value for closed-loop field current control.</td>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
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<td>Dyn. index:</td>
<td>-</td>
<td>Unit selection: -</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td>Not for motor type:</td>
<td>Scaling: PERCENT</td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>-</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p50613[0...4]</td>
<td><strong>Cl: Field current setpoint limiting sig source for var upper limit / If_li up li sig s</strong></td>
<td>Sets the signal sources for generating the upper limit of the field current setpoint (CO: r52273).</td>
<td>Refer to: r50073, p50102, r52273</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 6905</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Unit selection: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td>Not for motor type:</td>
<td>Scaling: PERCENT</td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>-</td>
<td>-</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
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<th>Access level</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50614[0...4]</td>
<td>CI: Field current setpoint limiting sig source for var lower limit / If_lim l sig s</td>
<td>T</td>
<td>-</td>
<td>3</td>
<td>6905</td>
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</tbody>
</table>

**DC_CTRL**

- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:** Sets the signal sources for generating the lower limit of the field current setpoint (CO: r52274).

**Dependency:** Refer to: p50103, r52274

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50615[0...3]</td>
<td>CI: EMF controller setpoint signal source / EMF ctr set sig s</td>
<td>T</td>
<td>-</td>
<td>3</td>
<td>6900</td>
<td>-</td>
<td>-</td>
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<td>1</td>
<td>-</td>
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</tbody>
</table>

**DC_CTRL**

- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Index:**

- [0] = Setpoint 0
- [1] = Setpoint 1
- [2] = Setpoint 2
- [3] = Setpoint 3

**Dependency:** Refer to: r52288

**Note:** The overall setpoint is available via connector output r52288 for further interconnection.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50616</td>
<td>CI: EMF controller actual value signal source / EMF ctr act sig s</td>
<td>T</td>
<td>-</td>
<td>3</td>
<td>6900</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**DC_CTRL**

- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Dependency:** Refer to: r52285

**Note:** The actual value is available via connector output r52285 for further interconnection.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
<th>Func. diagram</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Expert list</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50618</td>
<td>CI: Field gating unit signal source for field direction / Field g unit dir</td>
<td>T</td>
<td>-</td>
<td>3</td>
<td>6915</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

**DC_CTRL**

- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Description:** Sets the signal source for the field direction on the field gating unit.
2 Parameters

2.2 List of parameters

### p50619

**CI: Acceleration value for inertia compensation / Comp inert acc val**

**DC_CTRL**

- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** Unsigned32 / FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6820  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** Max  
- **Max:**  
- **Factory setting:** 52191[0]

**Description:** Sets the signal source for the acceleration value for inertia compensation.

### p50620

**CI: Speed controller setpoint/actual value difference signal source / n_ctr set/ac sig s**

**DC_CTRL**

- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** Unsigned32 / FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6815  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** Max  
- **Max:**  
- **Factory setting:** 52165[0]

**Description:** Sets the signal source for the setpoint/actual value difference on the speed controller.

**Dependency:** Refer to: r52164

**Note:** The setpoint/actual value difference for the speed controller is available in r52164 for further interconnection.

### p50621

**CI: Speed controller setpoint 1 signal source / n_ctr set 1 sig s**

**DC_CTRL**

- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** Unsigned32 / FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6810  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** Max  
- **Max:**  
- **Factory setting:** 52176[0]

**Description:** Sets the signal source for setpoint 1 on the speed controller.

**Dependency:** Refer to: p50622, p50623, p50624, r52165

**Note:** The setpoint/actual value difference (r52165) results from setpoint 1 and 2 (p50621, p50622) and actual value 1 and 2 (p50623, p50624).

### p50622

**CI: Speed controller setpoint 2 signal source / n_ctr set 2 sig s**

**DC_CTRL**

- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** Unsigned32 / FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6810  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** Max  
- **Max:**  
- **Factory setting:** 52174[0]

**Description:** Sets the signal source for setpoint 2 on the speed controller.

**Dependency:** Refer to: p50621, p50623, p50624, r52165

**Note:** The setpoint/actual value difference (r52165) results from setpoint 1 and 2 (p50621, p50622) and actual value 1 and 2 (p50623, p50624).

### p50623

**CI: Signal source for speed controller actual value 1 / n_ctr act 1 sig s**

**DC_CTRL**

- **Can be changed:** T  
- **Calculated:** -  
- **Access level:** 3  
- **Data type:** Unsigned32 / FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6810  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** Max  
- **Max:**  
- **Factory setting:** 52179[0]

**Description:** Sets the signal source for actual value 1 on the speed controller.
2 Parameters

2.2 List of parameters

 Dependency: Refer to: p50621, p50622, p50624, r52165
 Note: The setpoint/actual value difference (r52165) results from setpoint 1 and 2 (p50621, p50622) and actual value 1 and 2 (p50623, p50624).

**p50624**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>CI: Signal source for speed controller actual value 2 / n_ctr act 2 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for actual value 2 on the speed controller.

Dependency: Refer to: p50621, p50622, p50623, r52165
Note: The setpoint/actual value difference (r52165) results from setpoint 1 and 2 (p50621, p50622) and actual value 1 and 2 (p50623, p50624).

**p50625[0...n]**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>CI: Signal source for speed controller setpoint / n_ctr set sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for the setpoint on the speed controller.
This signal can be smoothed using p50228.

Dependency: Refer to: p50228

**p50626[0...n]**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>CI: Signal source for speed controller actual value smoothing / Act v smoo sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Sets the signal source to enable smoothing of the actual value on the speed controller.

**p50627**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>CI: Derivative-action element signal source / D elem sig s</th>
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</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Sets the signal source for the derivative-action element.

Dependency: Refer to: p50205, p50206, r52168, r52169
### Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>p50628</strong></td>
<td>CI: Band-stop 1 signal source / Band-st 1 sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>Refer to: p50201, p50202, p52177</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Sets the signal source for band-stop 1.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50629</strong></td>
<td>CI: Band-stop 2 signal source / Band-st 2 sig s</td>
</tr>
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<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>Refer to: p50203, p50204, p52178</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Sets the signal source for band-stop 2.</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50630</strong></td>
<td>CI: Speed controller droop signal source / Droop sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
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<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>Refer to: p50203, p50204, p52178</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Sets the signal source for the droop on the speed controller.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50631</strong></td>
<td>CI: Speed controller integral component setting value signal source / I_co set v sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>Refer to: p50230, p50695</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Sets the signal source for the setting value of the integral component for the speed controller.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50632[0...3]</strong></td>
<td>CI: RFG signal source for positive limiting after RFG / RFG pos lim sig s</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T, Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Dependency</strong></td>
<td>Refer to: p50632[0 to 3]</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Sets the signal sources for positive limiting after the ramp-function generator (setpoint limiting).</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>The minimum of the signals is forwarded to the limiter via connector input p50632[0 to 3].</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50633[0...3]</strong></td>
<td>CI: RFG signal source for negative limiting after RFG / RFG neg lim sig s</td>
<td>Sets the signal sources for negative limiting after the ramp-function generator (setpoint limiting). The maximum of the signals is forwarded to the limiter via connector input p50633[0 to 3].</td>
</tr>
<tr>
<td><strong>p50634[0...1]</strong></td>
<td>CI: RFG input signal for limiting after RFG / RFG lim inp sig</td>
<td>Sets the signal sources for the input signals in the case of limiting after the ramp-function generator (setpoint limiting). The signals via connector input p50634[0 to 1] are added to the input and forwarded to &quot;Limiting after ramp-function generator&quot;.</td>
</tr>
<tr>
<td><strong>p50635[0...n]</strong></td>
<td>CI: Setpoint processing signal source for RFG setpoint / RFG set sig s</td>
<td>Sets the signal source for the ramp-function generator's setpoint.</td>
</tr>
<tr>
<td><strong>p50636[0...5]</strong></td>
<td>CI: RFG signal source for valuation factor 1 / RFG val_f 1 sig s</td>
<td>Sets the signal sources for the valuation factors for ramp-function generator parameter set 1. Refer to: p50303, p50304, p50305, p50306</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32 / FloatingPoint32

**P-Group:** -

**Unit group:** -

**Unit selection:** -

**Not for motor type:** -

**Min**

**Max**

**Calculated:** -

**Dyn. index:** -

**Unit group:** -

**Scaling:** PERCENT

**Dependency:** Refer to: p50303, p50304, p50305, p50306
### 2 Parameters

#### 2.2 List of parameters

**Note:** The valuation factors affect the set values of the following parameters:
- p50303: Ramp-up time 1
- p50304: Ramp-down time 1
- p50305: Initial rounding 1
- p50306: Final rounding 1

<table>
<thead>
<tr>
<th>p50637[0...n]</th>
<th>BI: RFG parameter set 2 selection signal source / RFG parameter set 2 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
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<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>

**Description:**
Sets the signal source for the selection of "ramp-function generator parameter set 2".

**Dependency:**
- Refer to: p50307, p50308, p50309, p50310, p50638
- Refer to: F60041

**Note:** The following applies as regards selection of ramp-function generator parameter set 2:
- This selection has a higher priority than selection by means of the ramp-up integrator.
- This selection has a lower priority than quick stop (OFF3); in other words, in the event of a quick stop (OFF3) the values set in p50296, p50297, and p50298 become effective.
- A corresponding message is output if ramp-function generator parameter sets 2 and 3 are selected at the same time.

<table>
<thead>
<tr>
<th>p50638[0...n]</th>
<th>BI: RFG parameter set 3 selection signal source / RFG parameter set 3 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
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<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>

**Description:**
Sets the signal source for the selection of "ramp-function generator parameter set 3".

**Dependency:**
- Refer to: p50311, p50312, p50313, p50314, p50638
- Refer to: F60041

**Note:** The following applies as regards selection of ramp-function generator parameter set 3:
- This selection has a higher priority than selection by means of the ramp-up integrator.
- This selection has a lower priority than quick stop (OFF3); in other words, in the event of a quick stop (OFF3) the values set in p50296, p50297, and p50298 become effective.
- A corresponding message is output if ramp-function generator parameter sets 2 and 3 are selected at the same time.

<table>
<thead>
<tr>
<th>p50639[0...1]</th>
<th>CI: RFG signal source for setting value / RFG set val sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td></td>
</tr>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
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<td>Dyn. index: CDS</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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></td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the ramp-function generator's setting values.

**Index:**
- [0] = Setting value
- [1] = Setting value if machine is not running
## 2 Parameters

### 2.2 List of parameters

**Dependency:**
The setting value for the ramp-function generator output is selected via binector input p50640.

- If the machine is not running, the value supplied via connector input p50639[1] is accepted.
- The value supplied via connector input p50639[0] is accepted as the setting value.

Refer to: p50640

**Description:**
Sets the signal source for accepting the setting value of the ramp-function generator.

**Dependency:**
Refer to: p50639

#### p50640[0...n] BI: RFG signal source for accepting setting value / RFG accept set v

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

**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Unit group:** -

**Unit selection:** -

**Min:** -

**Max:** -

**Scaling:** -

**Expert list:** 1

**Factory setting:** 0

**Description:**
Sets the signal source for accepting the setting value of the ramp-function generator.

**Note:**
The "Bypass ramp-function generator" signal can also be set via binector input p50649[0 to 2].

#### p50641[0...n] BI: Bypass ramp-function generator signal source / Bypass RFG sig s

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

**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Unit group:** -

**Unit selection:** -

**Min:** -

**Max:** -

**Scaling:** -

**Expert list:** 1

**Factory setting:** 0

**Description:**
Sets the signal source for "Bypass ramp-function generator".

**Note:**
The "Bypass ramp-function generator" signal can also be set via binector input p50649[0 to 2].

#### p50642[0...3] CI: Setpoint processing sig source for pos limiting of main setpoint / M set lim p sig s

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

**Data type:** Unsigned32 / FloatingPoint32

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Min:** -

**Max:** -

**Scaling:** PERCENT

**Expert list:** 1

**Factory setting:** 52002[0]

**Description:**
Sets the signal source for variable positive limiting of the main setpoint.

**Note:**
Negative values at the selected parameters generate a negative maximum value at the limiting output.

**Note:**
The minimum of the values set via index 0 to 3 is applied as the limit.

#### p50643[0...3] CI: Setpoint processing sig source for neg limiting of main setpoint / M set lim n sig s

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

**Data type:** Unsigned32 / FloatingPoint32

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Min:** -

**Max:** -

**Scaling:** PERCENT

**Expert list:** 1

**Factory setting:**

- [0] 52184[0]
- [1] 52185[0]
- [2] 52186[0]
- [3] 52187[0]

**Description:**
Sets the signal source for variable positive limiting of the main setpoint.

**Note:**
Positive values at the selected parameters generate a positive minimum value at the limiting output.

**Note:**
The maximum of the values set via index 0 to 3 is applied as the limit.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Access level</th>
<th>Data type</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50644[]</td>
<td>CI: Setpoint processing signal source for main setpoint / M set sigs</td>
<td>Sets the signal source for the main setpoint in the context of setpoint processing.</td>
<td>Refer to: p50320, p50322</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 3135</td>
</tr>
<tr>
<td>p50645[]</td>
<td>CI: Setpoint processing signal source for additional setpoint / A set sigs</td>
<td>Sets the signal source for the additional setpoint in the context of setpoint processing.</td>
<td>Refer to: p50321, p50323</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 3135</td>
</tr>
<tr>
<td>p50646[]</td>
<td>BI: RFG signal source for ramp-up integrator enable / R-up int ena sigs</td>
<td>Sets the signal source for enabling the ramp-up integrator on the ramp-function generator.</td>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 3150</td>
</tr>
<tr>
<td>p50647[]</td>
<td>BI: RFG tracking activation signal source / RFG trck act sigs</td>
<td>Sets the signal source for activating/de-activating ramp-function generator tracking.</td>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 3152</td>
</tr>
<tr>
<td>p50648[]</td>
<td>CI: RFG signal source for input signal / RFG inp sig sigs</td>
<td>Sets the signal source for the ramp-function generator's input signal.</td>
<td></td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td>Func. diagram: 3151</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**p50649[0...2]**

**BI: Bypass ramp-function generator signal source / Bypass RFG sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for "Bypass ramp-function generator".

**Dependency:**

Refer to: p50641

**Note:**

The "Bypass ramp-function generator" signal can also be set via binector input p50641.

About index 0, 1, 2 and their factory setting:

The "Bypass ramp-function generator" signal comes from the "Fixed setpoint", "Jog setpoint", "Creep setpoint" function.

- **Description:** Sets the signal sources for "Bypass ramp-function generator".
- **Dependency:** Refer to: p50641
- **Note:** The "Bypass ramp-function generator" signal can also be set via binector input p50641.

**Index:**

0 = Setting value 1
1 = Setting value 2

**p50650[0...1]**

**CI: RFG signal source for setting value with OFF1 / RFG s v OFF1 sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for the ramp-function generator's setting value with OFF1.

The ramp-function generator is set to this value once.

**Index:**

0 = Setting value 1
1 = Setting value 2

**Dependency:**

The selection of the signal source for the setting value is set via p50318.

p50318 = 0: Do not set ramp-function generator output

p50318 = 1: Set ramp-function generator output to the value supplied via connector input p50650[0].

p50318 = 2: Set ramp-function generator output to the value supplied via connector input p50650[1].

Refer to: p50318

**p50651[0...6]**

**CI: RFG tracking signal sources / RFG track sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for the effective limits for ramp-function generator tracking.

**Index:**

0 = Scaled motor flux
1 = Speed actual value
2 = Effective positive torque limit
3 = Effective negative torque limit
4 = Effective positive current limit

**p50649[0...2]**

**BI: Bypass ramp-function generator signal source / Bypass RFG sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for "Bypass ramp-function generator".

**Dependency:**

Refer to: p50641

**Note:**

The "Bypass ramp-function generator" signal can also be set via binector input p50641.

About index 0, 1, 2 and their factory setting:

The "Bypass ramp-function generator" signal comes from the "Fixed setpoint", "Jog setpoint", "Creep setpoint" function.

- **Description:** Sets the signal sources for "Bypass ramp-function generator".
- **Dependency:** Refer to: p50641
- **Note:** The "Bypass ramp-function generator" signal can also be set via binector input p50641.

**Index:**

0 = Setting value 1
1 = Setting value 2

**p50650[0...1]**

**CI: RFG signal source for setting value with OFF1 / RFG s v OFF1 sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for the ramp-function generator's setting value with OFF1.

The ramp-function generator is set to this value once.

**Index:**

0 = Setting value 1
1 = Setting value 2

**Dependency:**

The selection of the signal source for the setting value is set via p50318.

p50318 = 0: Do not set ramp-function generator output

p50318 = 1: Set ramp-function generator output to the value supplied via connector input p50650[0].

p50318 = 2: Set ramp-function generator output to the value supplied via connector input p50650[1].

Refer to: p50318

**p50651[0...6]**

**CI: RFG tracking signal sources / RFG track sig s**

- **Can be changed:** T
- **Data type:** Unsigned32 / FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**DC_CTRL**

**Description:**

Sets the signal sources for the effective limits for ramp-function generator tracking.

**Index:**

0 = Scaled motor flux
1 = Speed actual value
2 = Effective positive torque limit
3 = Effective negative torque limit
4 = Effective positive current limit
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>[5] = Effective negative current limit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[6] = Effective speed controller proportional gain</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50671[0...n]</td>
<td>Setpoint processing signal source to enable negative direction of rotation</td>
<td>Refer to: p50672</td>
<td>1 signal: Negative direction of rotation enabled 0 signal: Negative direction of rotation disabled</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Functional diagram: 3135</td>
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<tr>
<td>P-Group: -</td>
<td>Unit group: -</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>
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</tr>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50672[0...n]</td>
<td>Setpoint processing signal source to enable positive direction of rotation</td>
<td>Refer to: p50671</td>
<td>1 signal: Positive direction of rotation enabled 0 signal: Positive direction of rotation disabled</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Functional diagram: 3135</td>
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<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td></td>
<td></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>
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<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50673[0...n]</td>
<td>Motorized potentiometer signal source to increase setpoint</td>
<td>Refer to: p50471</td>
<td>This parameter is only effective in manual mode (p50471 = 0).</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: CDS, p0170</td>
<td>Functional diagram: 3110</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
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<td></td>
</tr>
<tr>
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<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50674[0...n]</td>
<td>Motorized potentiometer signal source to lower setpoint</td>
<td>Refer to: p50471</td>
<td>This parameter is only effective in manual mode (p50471 = 0).</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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>
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<td>Factory setting</td>
<td></td>
</tr>
<tr>
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<td>-</td>
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</table>
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p50680[0...n]</strong></td>
<td>BI: Fixed setpoint signal source for connector selection 0 / Fix set con0 sig s</td>
<td>Sets the signal source for the selection of connector 0 (p50431[0]).</td>
</tr>
<tr>
<td><strong>p50681[0...n]</strong></td>
<td>BI: Fixed setpoint signal source for connector selection 1 / Fix set con1 sig s</td>
<td>Sets the signal source for the selection of connector 1 (p50431[1]).</td>
</tr>
<tr>
<td><strong>p50684[0...n]</strong></td>
<td>BI: Speed controller droop enable / Droop enable</td>
<td>Sets the signal source to enable droop on the speed controller.</td>
</tr>
<tr>
<td><strong>p50687[0...n]</strong></td>
<td>BI: Speed controller signal source for master/slave drive / Mast/sl sig s</td>
<td>Sets the signal source for the master or slave drive on the speed controller.</td>
</tr>
</tbody>
</table>

**Description:**

Sets the signal source for the selection of connector 0 (p50431[0]).

Sets the signal source for the selection of connector 1 (p50431[1]).

Sets the signal source to enable droop on the speed controller.

Sets the signal source for the master or slave drive on the speed controller.

**Note:**

The following values are multiplied by the droop output dependent upon the signal state:

1 signal: Enable (r50630)

0 signal: No enable (0%)

Torque control is active on the slave drive.

Speed control is active on the master drive.

**Data type:** Unsigned32 / Binary

**DC_CTRL**

**Can be changed:** T

**Calculated:** -

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 3115

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 3115

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 6805

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 6805

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 6810, 6830

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**

**Access level:** 2

**Func. diagram:** 6810, 6830

**Dyn. index:** CDS, p0170

**Unit group:** -

**Not for motor type:** -

**Min**

**Max**

**Expert list:** 1

**Factory setting**
### Parameters

#### 2.2 List of Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50691[0...n]</td>
<td>BI: Sequence control line contactor feedback / Line cont feedb</td>
<td></td>
<td>Sets the signal source for feedback from the line contactor. The feedback signal is checked and fault F60104 is triggered in the following cases: - If, following power-up, a 1 signal is not detected within the time set in p50095 (in other words, if the line contactor has not closed). - If a 0 signal is detected during operation. Feedback from the line contactor can be achieved by integrating one of the line contactor's auxiliary contacts into the device control.</td>
</tr>
<tr>
<td>p50692[0...n]</td>
<td>BI: Ci-loop field curr ctrl sig source for inject of standst field / If_ctr stst sig s</td>
<td>Refer to: F60045</td>
<td></td>
</tr>
<tr>
<td>p50693[0...n]</td>
<td>BI: EMF controller enable signal source / EMF ctr ena sig s</td>
<td></td>
<td>Sets the signal source to enable the EMF controller.</td>
</tr>
<tr>
<td>p50694[0...n]</td>
<td>BI: Torque limiting signal source to enable changeover / T lim ch ena sig s</td>
<td>Refer to: p50180, p50181, p50182, p50183</td>
<td>Sets the signal source to enable the torque limits to be changed over.</td>
</tr>
</tbody>
</table>

#### Parameter Details

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>p50692[0...n]</td>
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<td>2</td>
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<th>Func. diagram:</th>
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<tbody>
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<td>CDS, p0170</td>
<td>2651</td>
</tr>
<tr>
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<td>6910, 8046</td>
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<tr>
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<tr>
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<td>CDS, p0170</td>
</tr>
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<td>p50694[0...n]</td>
<td>CDS, p0170</td>
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<tr>
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<th>Functional diagram:</th>
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<tr>
<td>p50692[0...n]</td>
<td>6910, 8046</td>
</tr>
<tr>
<td>p50693[0...n]</td>
<td>6900</td>
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<tr>
<td>p50694[0...n]</td>
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</table>
### 2 Parameters

#### 2.2 List of parameters

**p50695[0...n] BI: Signal source for setting speed controller integral component / Set I_co sig s**

<table>
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**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Func. diagram:** 6815

**Unit group:** -

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** 0

**Description:**

Sets the signal source for setting the integral component on the speed controller. The value supplied via connector input p50631 is used as the setting value. With a 0/1 signal from p50695, the integral component of the speed controller is tracked continuously to the value of the signal present at connector input p50631 for the time that has been set in p50230.

**Dependency:** Refer to: p50230, p50631

**Note:** For the same signal source for the speed controller enable and integral component, the time in p50230 must be set greater than 0 ms.

**p50696[0...n] BI: Signal source for stop speed controller integral component / Stop I_co sig s**

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

**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Func. diagram:** 6815

**Unit group:** -

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** 0

**Description:**

Sets the signal source for stopping the integral component on the speed controller.

**Note:** Dependent upon the signal state, the following applies:

0 signal: Integral component is not stopped

1 signal: Integral component is stopped

**p50697[0...n] BI: Enable for inertia compensation / Inert comp ena**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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</thead>
<tbody>
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**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Func. diagram:** 6820

**Unit group:** -

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** 1

**Description:**

Sets the signal source for enabling moment of inertia compensation.

**Note:** Dependent upon the signal state, the following values are added to the output for friction and moment of inertia compensation:

1 signal: Enable (r52173)

0 signal: No enable (0%)

**p50698[0...n] BI: Signal source for speed controller PI/P controller changeover / n_ctr PI/P sig s**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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</thead>
<tbody>
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**Data type:** Unsigned32 / Binary

**Dyn. index:** CDS, p0170

**Func. diagram:** 6815

**Unit group:** -

**Unit selection:** -

**Expert list:** 1

**Min:** -

**Max:** 1

**Description:**

Sets the signal source for the speed-dependent changeover between PI and P controller on the speed controller.

**Dependency:** Refer to: p50221, p50222, r52166
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p50700</th>
<th>CUD analog input 0 type / CUD AI 0 type</th>
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<tbody>
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<td>Data type: Integer16</td>
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<tr>
<td>P-Group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Expert list: 1</td>
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<tr>
<td>Min</td>
<td>Factory setting</td>
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<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

**Description:**
Sets the type for analog input 0 (X177.25/26) on the CUD.

**Value:**
- 0: Bipolar voltage input (-10 V ... +10 V)
- 1: Bipolar current input (-20 mA to +20 mA)
- 2: Unipolar current input monitored (+4 mA to +20 mA)

**Note:**
AI: Analog Input

<table>
<thead>
<tr>
<th>p50701[0...n]</th>
<th>CUD analog input 0 scaling / CUD AI 0 scal</th>
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</thead>
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<td>Data type: FloatingPoint32</td>
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<td>Min</td>
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<tr>
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<td>1000.0 [%]</td>
</tr>
<tr>
<td>100.0 [%]</td>
<td>-</td>
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</tbody>
</table>

**Description:**
Sets the scaling for analog input 0 (X177.25/26) on the CUD.

**Example:**
- p50701 = 90%
  - 10 V or 20 mA is scaled to 90%
  - 5 V or 10 mA is equivalent to 45%

<table>
<thead>
<tr>
<th>p50702</th>
<th>CUD analog input 0 offset / CUD AI 0 offs</th>
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<tbody>
<tr>
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<td>Expert list: 1</td>
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<tr>
<td>Min</td>
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</tr>
<tr>
<td>0.00 [%]</td>
<td>-</td>
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</table>

**Description:**
Sets the offset for analog input 0 (X177.25/26) on the CUD.

<table>
<thead>
<tr>
<th>p50703</th>
<th>CUD analog input 0 signal processing / CUD AI 0 sig proc</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
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<td>Not for motor type: -</td>
<td>Expert list: 1</td>
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<tr>
<td>0</td>
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<tr>
<td>0</td>
<td>-</td>
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</tbody>
</table>

**Description:**
Sets the signal processing mode for analog input 0 (X177.25/26) on the CUD.

**Value:**
- 0: Signal not controlled
- 1: Signal absolute value generation
- 2: Signal inverted
- 3: Signal absolute value generation inverted
### 2 Parameters

#### 2.2 List of parameters

**p50704**

**BI: CUD analog input 0 inversion / CUD AI 0 inv**

<table>
<thead>
<tr>
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<tr>
<td>Min</td>
<td>Max</td>
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</tbody>
</table>

**Description:**
Sets the signal source for inverting the signal from analog input 0 (X177.25/26) on the CUD.

1 signal: Inversion
0 signal: No inversion

**p50705**

**CUD analog input 0 smoothing time constant / CUD AI 0 T**

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<tr>
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**Description:**
Sets the time constant for smoothing the signal from analog input 0 (X177.25/26) on the CUD.

**p50706**

**BI: CUD analog input 0 signal source for enable / CUD AI 0 ena sig s**

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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for enabling analog input 0 (X177.25/26) on the CUD.

**Note:**
1 signal: Analog input enabled
0 signal: Analog input not enabled (r52011 = 0%)

**p50707**

**CUD analog input 0 simulation setpoint / CUD AI 0 sim setp**

<table>
<thead>
<tr>
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</tr>
<tr>
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<td>Max</td>
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</table>

**Description:**
Sets the setpoint for the simulation of analog input 0 (X177.25/26) on the CUD.

**Dependency:**
Refer to: p50709

**Note:**
Simulation is selected using p50709 = 1.

**p50708**

**Activation of analog input synchronization / AI sync act**

<table>
<thead>
<tr>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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</tbody>
</table>

**Description:**
Setting to activate/de-activate the synchronization of the analog inputs of two Control Unit DC MASTERs (CUDs).
### 2 Parameters

#### 2.2 List of parameters

**Value:**

0: No synchronized analog inputs  
1: 6 synchronized analog inputs on left-hand CUD  
2: 6 synchronized analog inputs on right-hand CUD  
3: 6 synchronized analog inputs on left-hand and right-hand CUD  

**Notice:** This parameter must always be set to the same value on both CUDs!

**Note:**

- If value = 0:  
  There is no quasi-synchronization of the analog inputs on the two CUDs. Connector outputs r52030[0 to 6] on both CUDs always indicate a value of 0%.

- If value = 1:  
  The analog inputs of the right-hand CUD are interpolated on the left-hand CUD in such a way that 6 simultaneously scanned values appear at the connector outputs r52030[0 to 6] of the left-hand CUD. Connector outputs r52030[0 to 6] on the right-hand CUD always indicate a value of 0%.

- If value = 2:  
  The analog inputs of the left-hand CUD are interpolated on the right-hand CUD in such a way that 6 simultaneously scanned values appear at the connector outputs r52030[0 to 6] on the left-hand CUD always indicate a value of 0%.

- If value = 3:  
  The analog inputs of the right-hand CUD are interpolated on the left-hand CUD in such a way that 6 simultaneously scanned values appear at the connector outputs r52030[0 to 6] of the right-hand CUD. The analog inputs of the left-hand CUD are interpolated on the right-hand CUD in such a way that 6 simultaneously scanned values appear at the connector outputs r52030[0 to 6] on the right-hand CUD.

---

**p50709**  
**CUD analog input 0 simulation selection / CUD AI 0 sim sel**  
**DC_CTRL**  
**Can be changed:** T  
**Data type:** Integer16  
**P-Group:** -  
**Not for motor type:** -  
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**Calc.:** -  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting:** 0  
**Access level:** 2  
**Func. diagram:** 2075  
**Description:** Setting to select the simulation of analog input 0 (X177.25/26) on the CUD.  
**Value:**  
0: Simulation deactivated  
1: Simulation activated  
**Dependency:** Refer to: p50707  
**Note:** The setpoint for the simulation is set in p50707.

---

**p50710**  
**CUD analog input 1 type / CUD AI 1 type**  
**DC_CTRL**  
**Can be changed:** T  
**Data type:** Integer16  
**P-Group:** -  
**Not for motor type:** -  
**Min:** 0  
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**Calc.:** -  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting:** 0  
**Access level:** 2  
**Func. diagram:** 2080  
**Description:** Sets the type for analog input 1 (X177.27/28) on the CUD.  
**Value:**  
0: Bipolar voltage input (-10 V ... +10 V)  
1: Bipolar current input (-20 mA to +20 mA)  
2: Unipolar current input monitored (+4 mA to +20 mA)  
**Note:** AI: Analog Input

---

**p50711[0...n]**  
**CUD analog input 1 scaling / CUD AI 1 scal**  
**DC_CTRL**  
**Can be changed:** U, T  
**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
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**Calc.:** -  
**Dyn. index:** DDS, p0180  
**Unit group:** -  
**Scaling:** PERCENT  
**Unit selection:** -  
**Expert list:** 1  
**Factory setting:** 100.0 [%]  
**Access level:** 2  
**Func. diagram:** 2080  
**Description:** Sets the scaling for analog input 1 (X177.27/28) on the CUD.
The value indicates the percentage value for the mapping of an input voltage of 10 V or an input current of 20 mA at the analog input.

Example:
\[ p50711 = 90\% \]
\[ \rightarrow 10 \text{ V or } 20 \text{ mA is scaled to } 90\% \]
\[ \rightarrow 5 \text{ V or } 10 \text{ mA is equivalent to } 45\% \]

### p50712 CUD analog input 1 offset / CUD AI 1 offs

<table>
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<tr>
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<th>Can be changed:</th>
<th>Calculated:</th>
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<td>200.00 [%]</td>
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</tbody>
</table>

**Description:**
Sets the offset for analog input 1 (X177.27/28) on the CUD.

### p50713 CUD analog input 1 signal processing / CUD AI 1 sig proc

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Integer16</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>-</th>
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</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>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Value:**
0: Signal not controlled
1: Signal absolute value generation
2: Signal inverted
3: Signal absolute value generation inverted

### p50714 BI: CUD analog input 1 inversion / CUD AI 1 inv

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

<table>
<thead>
<tr>
<th>Data type:</th>
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</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
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</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>-</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for inverting the signal from analog input 1 (X177.27/28) on the CUD.
1 signal: Inversion
0 signal: No inversion

### p50715 CUD analog input 1 smoothing time constant / CUD AI 1 T

<table>
<thead>
<tr>
<th>DC_CTRL</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>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
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</tr>
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</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>0 [ms]</td>
<td>10000 [ms]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the time constant for smoothing the signal from analog input 1 (X177.27/28) on the CUD.
### List of parameters

#### p50716

**Description:**
Sets the signal source for enabling analog input 1 (X177.27/28) on the CUD.

**Note:**
1 signal:
- Analog input is enabled (value = 1%)
0 signal:
- Analog input is disabled (value = 0%)

**Dependence:**
Refer to: p50717

**Value:**
- Minimum: -
- Maximum: 1
- Factory setting: 1

#### p50717

**Description:**
Sets the setpoint for the simulation of analog input 1 (X177.27/28) on the CUD.

**Dependency:**
Refer to: p50719

**Value:**
- Minimum: -130.0 [%]
- Maximum: 130.0 [%]
- Factory setting: 0.0 [%]

#### p50719

**Description:**
Setting to select the simulation of analog input 1 (X177.27/28) on the CUD.

**Value:**
- 0: Simulation deactivated
- 1: Simulation activated

**Dependency:**
Refer to: p50717

**Value:**
- Minimum: 0
- Maximum: 1
- Factory setting: 0

#### p50721[0...n]

**Description:**
Sets the scaling for analog input 2 (X177.29/30) on the CUD.

**Value:**
- Minimum: -1000.0 [%]
- Maximum: 1000.0 [%]
- Factory setting: 100.0 [%]

**Note:**
- AI: Analog Input
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Data type</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Access level</th>
<th>Expert list</th>
<th>Factory setting</th>
<th>Min</th>
<th>Max</th>
<th>CAN BE CHANGED</th>
<th>CALCULATED</th>
<th>Dynamic index</th>
<th>Function diagram</th>
<th>Unit selection</th>
</tr>
</thead>
<tbody>
<tr>
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<td>CUD analog input 2 offset / CUD AI 2 offs</td>
<td>DC_CTRL</td>
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<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>2080</td>
<td>-</td>
</tr>
<tr>
<td>p50723</td>
<td>CUD analog input 2 signal processing / CUD AI 2 sig proc</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>3</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>2080</td>
<td>-</td>
</tr>
<tr>
<td>p50724</td>
<td>BI: CUD analog input 2 inversion / CUD AI 2 inv</td>
<td>DC_CTRL</td>
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<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>2080</td>
<td>-</td>
</tr>
<tr>
<td>p50725</td>
<td>CUD analog input 2 smoothing time constant / CUD AI 2 T</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>2080</td>
<td>-</td>
</tr>
<tr>
<td>p50726</td>
<td>BI: CUD analog input 2 signal source for enable / CUD AI 2 ena sig s</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>T</td>
<td>-</td>
<td>-</td>
<td>2080</td>
<td>-</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>P-Group</th>
<th>Description</th>
<th>Index</th>
<th>Data type</th>
<th>Calculated</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Value</th>
<th>Factory setting</th>
<th>Access level</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>CUD analog input 2 simulation setpoint / CUD AI 2 sim setp</td>
<td>p50727</td>
<td>FloatingPoint32</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>Simulation is selected using p50729 = 1.</td>
<td>Sets the setpoint for the simulation of analog input 2 (X177.29/30) on the CUD.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>CUD analog input 2 simulation selection / CUD AI 2 sim sel</td>
<td>p50729</td>
<td>Integer16</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>Refer to: p50727</td>
<td>Setting to select the simulation of analog input 2 (X177.29/30) on the CUD.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Fast analog inputs scaling / Fast AI scal</td>
<td>p50731[0...3]</td>
<td>FloatingPoint32</td>
<td>Calculated:</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>0</td>
<td>The setpoint for the simulation is set in p50727.</td>
</tr>
</tbody>
</table>

**Note:**
- 1 signal: Analog input is enabled
- 0 signal: Analog input is disabled (value = 0%)
## 2 Parameters
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50732[0...3]</td>
<td>Fast analog inputs offset / Fast AI offs</td>
<td>DC_CTRL</td>
<td><strong>Can be changed:</strong> U, T</td>
<td><strong>Calculated:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong> FloatingPoint32</td>
<td><strong>Dyn. index:</strong> -</td>
<td><strong>Func. diagram:</strong> 2085, 2090</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>P-Group:</strong> -</td>
<td><strong>Unit group:</strong> -</td>
<td><strong>Unit selection:</strong> -</td>
<td></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>
<td></td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
<td><strong>Factory setting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%]</td>
<td>0.00 [%]</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>Sets the offset for fast analog inputs &quot;Select input 3 to 6&quot;.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| p50733[0...3] | Fast analog inputs signal processing / Fast AI sig | DC_CTRL | **Can be changed:** T | **Calculated:** - | **Access level:** 2 |
| **Data type:** Integer16 | **Dyn. index:** - | **Func. diagram:** 2085, 2090 |
| **P-Group:** - | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| **Min** | **Max** | **Factory setting** |
| 0 | 3 | 0 |
| **Description:** | Sets the signal processing for fast analog inputs "Select input 3 to 6". |

| p50734[0...3] | BI: Fast analog inputs inversion / Fast AI inv | DC_CTRL | **Can be changed:** T | **Calculated:** - | **Access level:** 2 |
| **Data type:** Unsigned32 / Binary | **Dyn. index:** - | **Func. diagram:** 2085, 2090 |
| **P-Group:** - | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| **Min** | **Max** | **Factory setting** |
| - | - | 0 |
| **Description:** | Sets the signal source for inverting the signals for fast analog inputs "Select input 3 to 6". |

| p50735[0...3] | Fast analog inputs smoothing time constant / Fast AI T | DC_CTRL | **Can be changed:** U, T | **Calculated:** - | **Access level:** 2 |
| **Data type:** FloatingPoint32 | **Dyn. index:** - | **Func. diagram:** 2085, 2090 |
| **P-Group:** - | **Unit group:** - | **Unit selection:** - |
| **Not for motor type:** - | **Scaling:** - | **Expert list:** 1 |
| **Min** | **Max** | **Factory setting** |
| 0 [ms] | 10000 [ms] | 0 [ms] |
| **Description:** | Sets the time constant for smoothing the signals for fast analog inputs "Select input 3 to 6". |
2 Parameters

2.2 List of parameters

**p50736[0...3]**  
**BI: Signal source to enable fast analog inputs / Fast AI ena sig s**

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

<table>
<thead>
<tr>
<th>Data type:</th>
<th>Unssigned32 / Binary</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>-</th>
</tr>
</thead>
</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>

**Description:**  
Sets the signal source for enabling fast analog inputs "Select input 3 to 6".

**Index:**
- [0] = Select input 3 (X177.1/2)
- [1] = Select input 4 (X177.3/4)
- [2] = Select input 5 (X177.5/6)
- [3] = Select input 6 (X177.7/8)

**Note:**
1 signal:  
Analog input is enabled
0 signal:  
Analog input is disabled (value = 0%)

**p50737[0...3]**  
**Fast analog inputs setpoint simulation / Fast AI sim setp**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
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</table>

<table>
<thead>
<tr>
<th>P-Group:</th>
<th>-</th>
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</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>-130.0 [%]</td>
<td>130.0 [%]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the setpoint for the simulation of the fast analog inputs (select input 3 ... 6).

**Index:**
- [0] = Select input 3 (X177.1/2)
- [1] = Select input 4 (X177.3/4)
- [2] = Select input 5 (X177.5/6)
- [3] = Select input 6 (X177.7/8)

**Dependency:**  
Refer to: p50739

**Note:**  
Simulation is selected using p50739[0...3] = 1.

**p50739[0...3]**  
**Fast analog inputs simulation selection / Fast AI sim sel**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>T</td>
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<table>
<thead>
<tr>
<th>Data type:</th>
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<table>
<thead>
<tr>
<th>P-Group:</th>
<th>-</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Not for motor type:</th>
<th>-</th>
</tr>
</thead>
</table>

<table>
<thead>
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<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

**Description:**  
Setting to select the simulation of the fast analog inputs (select input 3 ... 6).

**Value:**
- 0: Simulation deactivated
- 1: Simulation activated

**Index:**
- [0] = Select input 3 (X177.1/2)
- [1] = Select input 4 (X177.3/4)
- [2] = Select input 5 (X177.5/6)
- [3] = Select input 6 (X177.7/8)

**Dependency:**  
Refer to: p50737

**Note:**  
The setpoint for the simulation is set in p50737[0...3].
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p50741[0...n]</th>
<th>Analog input main actual value scaling / AI m act scal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Cannot be changed: C2(1), U, 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>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: DDS, p0180</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2075</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-270.00 [V] 270.00 [V] 60.00 [V]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the input voltage (8 - 270 V) for scaling to 100%.
Rated value of the input voltage at n_max (= tachometer voltage at maximum speed).
This parameter specifies the maximum speed at p50083 = 1.

**Note:**
AI: Analog Input

**Example:**
p50741 = 60
--> 30 V is scaled to 50 % for analog input main actual value scaled
--> 60 V is scaled to 100% for analog input main actual value scaled

<table>
<thead>
<tr>
<th>p50742</th>
<th>Analog input main actual value offset / AI m act offs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Cannot be changed: U, T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2075</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>PERCENT</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td>-200.00 [%]</td>
<td>200.00 [%] 0.00 [%]</td>
</tr>
</tbody>
</table>

**Description:**
Sets the offset for the "main actual value" (XT1.103/104).

<table>
<thead>
<tr>
<th>p50743</th>
<th>Analog input main actual value signal processing / AI m act sig</th>
</tr>
</thead>
<tbody>
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<td>Cannot be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Integer16</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2075</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode for signal processing for the "main actual value" analog input (XT1.103/104).  

<table>
<thead>
<tr>
<th>p50744</th>
<th>BI: Analog input main actual value inversion / AI m act inv</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
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</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>Unsigned32 / Binary</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2075</td>
</tr>
<tr>
<td><strong>P-Group:</strong></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Scaling:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Min:</strong></td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
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</tbody>
</table>

**Description:**
Sets the signal source for inverting the signal from the "main actual value" analog input (XT1.103/104).  
0 signal: No inversion  
1 signal: Inversion
2 Parameters
2.2 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><strong>p50745</strong></td>
<td>Analog input main actual value smoothing time constant / Al m act T</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2075</td>
</tr>
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<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the time constant for smoothing the signal from the &quot;main actual value&quot; analog input (XT1.103/104).</td>
<td></td>
<td></td>
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<tr>
<td><strong>p50746</strong></td>
<td>BI: Signal source to enable analog input main actual value / Al m act ena sig s</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td>Func. diagram: 2075</td>
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<td>Unit 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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<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source for enabling the analog input for the &quot;main actual value&quot; (XT1.103/104).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>1 signal: Analog input enabled</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 signal: Analog input not enabled (r52013 = 0%).</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p50747</strong></td>
<td>Analog input main actual value setpoint simulation / Al m_actV sim setp</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2075</td>
</tr>
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<td></td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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<tr>
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<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-130.0 [%]</td>
<td>130.0 [%]</td>
<td>0.0 [%]</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the setpoint for the simulation of the &quot;main actual value&quot; analog input (XT1.103/104).</td>
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<tr>
<td></td>
<td>Dependency:</td>
<td>Refer to: p50749</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>Simulation is selected using p50749 = 1.</td>
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<tr>
<td><strong>p50749</strong></td>
<td>Analog input main actual value simulation selection / Al m_actV sim sel</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Data type: Integer16</td>
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<td>Func. diagram: 2075</td>
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<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td></td>
<td></td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Setting to select the simulation of the &quot;main actual value&quot; analog input (XT1.103/104).</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value:</td>
<td>0: Simulation deactivated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1: Simulation activated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency:</td>
<td>Refer to: p50747</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note:</td>
<td>The setpoint for the simulation is set in p50747.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>p50750</strong></td>
<td>CI: CUD analog output 0 signal source / CUD AO 0 sig s</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Description:</td>
<td>Sets the signal source for the output value at analog output 0 (X177.49/50).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**Note:**
AO: Analog Output

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50751</td>
<td>CUD analog output 0 signal processing / CUD AO 0 sig proc</td>
<td>See below</td>
<td>0 [ms] 3 0 [ms]</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type</td>
<td>Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td>Unit 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>Factor setting</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>3</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the mode for signal processing at analog output 0 (X177.49/50).

**Value:**
0: Signal not controlled
1: Signal absolute value generation
2: Signal inverted
3: Signal absolute value generation inverted

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50752</td>
<td>CUD analog output 0 smoothing time constant / CUD AO 0 T</td>
<td>See below</td>
<td>0 [ms] 10000 [ms] 0 [ms]</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td>Unit 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>Factor setting</td>
<td></td>
</tr>
<tr>
<td>0 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the time constant for smoothing the signal from analog output 0 (X177.49/50).

**Note:**
Example:
p50753 = 5 V
--> 100% is scaled to 5 V
--> 50% corresponds to 2.5 V

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50753</td>
<td>CUD analog output 0 scaling / CUD AO 0 scal</td>
<td>See below</td>
<td>-200.00 [V] 200.00 [V] 10.00 [V]</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td>Unit 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>Factor setting</td>
<td></td>
</tr>
<tr>
<td>-200.00 [V]</td>
<td>200.00 [V]</td>
<td>10.00 [V]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the scaling for analog output 0 (X177.49/50).

The value indicates the output value for the mapping of an input value of 100% at the analog output.

**Note:**
Example:
p50753 = 5 V
--> 100% is scaled to 5 V
--> 50% corresponds to 2.5 V

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50754</td>
<td>CUD analog output 0 offset / CUD AO 0 offs</td>
<td>See below</td>
<td>-10.00 [V] 10.00 [V] 0.00 [V]</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
<td>Unit 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>Factor setting</td>
<td></td>
</tr>
<tr>
<td>-10.00 [V]</td>
<td>10.00 [V]</td>
<td>0.00 [V]</td>
<td></td>
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</tbody>
</table>

**Description:**
Sets the offset for analog output 0 (X177.49/50).
### 2 Parameters

#### 2.2 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><strong>p50755</strong></td>
<td><a href="#">CI: CUD analog output 1 signal source / CUD AO 1 sig s</a></td>
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<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>-</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
<td><strong>p50756</strong></td>
<td><a href="#">CUD analog output 1 signal processing / CUD AO 1 sig proc</a></td>
<td>Can be changed: U, T</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>-</td>
</tr>
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<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td>-</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>0</td>
</tr>
<tr>
<td><strong>p50757</strong></td>
<td><a href="#">CUD analog output 1 smoothing time constant / CUD AO 1 T</a></td>
<td>Can be changed: U, T</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>-</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2095</td>
<td>-</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0 [ms]</td>
</tr>
<tr>
<td><strong>p50758</strong></td>
<td><a href="#">CUD analog output 1 scaling / CUD AO 1 scal</a></td>
<td>Can be changed: U, T</td>
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</tr>
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<td>Func. diagram: 2095</td>
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<td>P-Group: -</td>
<td>Unit 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>
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<td>-200.00 [V]</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>200.00 [V]</td>
</tr>
</tbody>
</table>

---

**Note:**

- **Example:**
p50758 = 5 V

- 100% is scaled to 5 V

- 50% corresponds to 2.5 V
2 Parameters

2.2 List of parameters

**p50759  CUD analog output 1 offset / CUD AO 1 offs**

**DC_CTRL**

- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 2095
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: -
- Min: -10.00 [V]
- Max: 10.00 [V]
- Factory setting: 0.00 [V]

**Description:**
Sets the offset for analog output 1 (X177.51/52).

**Dependency:**
Refer to: p50766

**Note:**
The setpoint for the simulation is set in p50766.0...7.

**p50765  CUD digital inputs simulation selection / CUD DI sim sel**

**DC_CTRL**

- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dyn. index: -
- Func. diagram: 2050, 2060, 2065
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: -
- Max: 0000 0000 bin

**Description:**
Setting to select the simulation of the digital inputs on the CUD.

**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 (X177.11)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X177.12)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X177.13)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X177.14)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X177.15)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X177.16)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X177.17)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X177.18)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p50766

**Note:**
The setpoint for the simulation is set in p50766.0...7.

**p50766  CUD digital inputs simulation setpoint / CUD DI simul setp**

**DC_CTRL**

- Can be changed: U, T
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dyn. index: -
- Func. diagram: 2050, 2060, 2065
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min: -
- Max: 0000 0000 bin

**Description:**
Sets the setpoint for the simulation of the digital inputs on the CUD.

**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 (X177.11)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>01</td>
<td>DI 1 (X177.12)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>02</td>
<td>DI 2 (X177.13)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>03</td>
<td>DI 3 (X177.14)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>04</td>
<td>DI 4 (X177.15)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>05</td>
<td>DI 5 (X177.16)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>06</td>
<td>DI 6 (X177.17)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>07</td>
<td>DI 7 (X177.18)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p50765

**Note:**
Simulation is selected using p50765.0...7 = 1.
2 Parameters

2.2 List of parameters

**p50770[0..3]** | CUD digital outputs inversion / CUD DO inv
---|---
**DC_CTRL** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Integer16 | Dyn. index: - | Func. diagram: 2055
P-Group: - | Unit group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
0 | 1 | 0
Description: Setting to invert the signals at the CUD's digital outputs.
Value: 0: Not inverted
1: Inverted
Index: [0] = DO 0 (X177.19)
[1] = DO 1 (X177.20)
[2] = DO 2 (X177.21)
[3] = DO 3 (X177.22)
Note: DO: Digital Output

**p50771** | BI: CUD digital output 0 signal source / CUD DO 0 sig s
---|---
**DC_CTRL** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Unsigned32 / Binary | Dyn. index: - | Func. diagram: 2055
P-Group: - | Unit group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
- | - | 0
Description: Sets the signal source for digital output 0 (X177.19) on the CUD.

**p50772** | BI: CUD digital output 1 signal source / CUD DO 1 sig s
---|---
**DC_CTRL** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Unsigned32 / Binary | Dyn. index: - | Func. diagram: 2055
P-Group: - | Unit group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
- | - | 0
Description: Sets the signal source for digital output 1 (X177.20) on the CUD.

**p50773** | BI: CUD digital output 2 signal source / CUD DO 2 sig s
---|---
**DC_CTRL** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Unsigned32 / Binary | Dyn. index: - | Func. diagram: 2055
P-Group: - | Unit group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
- | - | 0
Description: Sets the signal source for digital output 2 (X177.21) on the CUD.

**p50774** | BI: CUD digital output 3 signal source / CUD DO 3 sig s
---|---
**DC_CTRL** | Can be changed: U, T | Calculated: - | Access level: 2
Data type: Unsigned32 / Binary | Dyn. index: - | Func. diagram: 2055
P-Group: - | Unit group: - | Unit selection: -
Not for motor type: - | Scaling: - | Expert list: 1
Min | Max | Factory setting
- | - | 0
Description: Sets the signal source for digital output 3 (X177.22) on the CUD.
Note: A restart is required if p50774 is logically combined with (2)r51579.0!
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50775</td>
<td>CUD digital output 0 delay time / CUD DO 0 t_del</td>
<td>Sets the delay time for digital output 0 (X177.19) on the CUD. The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2055</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 [ms]</td>
<td>10000 [ms]</td>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

| p50776    | CUD digital output 1 delay time / CUD DO 1 t_del | Sets the delay time for digital output 1 (X177.20) on the CUD. The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time. |
| DC_CTRL   | Can be changed: U, T | Calculated: -                                 | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: 2055                          |
| P-Group: - | Unit group: -      | Unit selection: -                             |
| Not for motor type: - | Scaling: -         | Expert list: 1                               |
| Min       | Max                 | Factory setting                              |
| 0 [ms]    | 10000 [ms]          | 0 [ms]                                       |

| p50777    | CUD digital output 2 delay time / CUD DO 2 t_del | Sets the delay time for digital output 2 (X177.21) on the CUD. The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time. |
| DC_CTRL   | Can be changed: U, T | Calculated: -                                 | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: 2055                          |
| P-Group: - | Unit group: -      | Unit selection: -                             |
| Not for motor type: - | Scaling: -         | Expert list: 1                               |
| Min       | Max                 | Factory setting                              |
| 0 [ms]    | 10000 [ms]          | 0 [ms]                                       |

| p50778    | CUD digital output 3 delay time / CUD DO 3 t_del | Sets the delay time for digital output 3 (X177.22) on the CUD. The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time. |
| DC_CTRL   | Can be changed: U, T | Calculated: -                                 | Access level: 2 |
| Data type: FloatingPoint32 | Dyn. index: - | Func. diagram: 2055                          |
| P-Group: - | Unit group: -      | Unit selection: -                             |
| Not for motor type: - | Scaling: -         | Expert list: 1                               |
| Min       | Max                 | Factory setting                              |
| 0 [ms]    | 10000 [ms]          | 0 [ms]                                       |

<table>
<thead>
<tr>
<th>p50780[0...3]</th>
<th>CUD digital inputs/outputs inversion / CUD DI/DO inv</th>
<th>Setting to invert the signals at the CUD's digital outputs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2060, 2065</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

### Value:
- 0: Not inverted
- 1: Inverted

### Index:
- [0] = DI/DO 4 (X177.15)
- [1] = DI/DO 5 (X177.16)
- [2] = DI/DO 6 (X177.17)
- [3] = DI/DO 7 (X177.18)

### Dependency:
The terminal must be set as an output (p50789[0...3]).

Refer to: p50789

### Note:
DI/DO: Bidirectional Digital Input/Output

---

**p50781**

**BI: CUD digital input/output 4 signal source / CUD DI/DO 4 sig s**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Access level:** 2

**Calculated:** -

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Func. diagram:** 2060

**Factory setting:** 0

**Description:**
Sets the signal source for digital input/output 4 (X177.15) on the CUD.

**Dependency:**
The terminal must be set as an output (p50789[0] = 1).

Refer to: p50789

---

**p50782**

**BI: CUD digital input/output 5 signal source / CUD DI/DO 5 sig s**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Access level:** 2

**Calculated:** -

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Func. diagram:** 2060

**Factory setting:** 0

**Description:**
Sets the signal source for digital input/output 5 (X177.16) on the CUD.

**Dependency:**
The terminal must be set as an output (p50789[1] = 1).

Refer to: p50789

---

**p50783**

**BI: CUD digital input/output 6 signal source / CUD DI/DO 6 sig s**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Access level:** 2

**Calculated:** -

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Func. diagram:** 2065

**Factory setting:** 0

**Description:**
Sets the signal source for digital input/output 6 (X177.17) on the CUD.

**Dependency:**
The terminal must be set as an output (p50789[2] = 1).

Refer to: p50789

---

**p50784**

**BI: CUD digital input/output 7 signal source / CUD DI/DO 7 sig s**

**DC_CTRL**

- **Can be changed:** U, T
- **Data type:** Unsigned32 / Binary
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

**Access level:** 2

**Calculated:** -

**Dyn. index:** -

**Unit group:** -

**Unit selection:** -

**Scaling:** -

**Expert list:** 1

**Func. diagram:** 2065

**Factory setting:** 0

**Description:**
Sets the signal source for digital input/output 7 (X177.18) on the CUD.

**Dependency:**
The terminal must be set as an output (p50789[3] = 1).

Refer to: p50789
**2 Parameters**

### 2.2 List of parameters

**p50785**

<table>
<thead>
<tr>
<th>CUD digital input/output 4 delay time / CUD DI/DO 4 t_del</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Data type:</td>
</tr>
<tr>
<td>P-Group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for digital input/output 4 (X177.15) on the CUD.

**Dependency:** The terminal must be set as an output (p50789[0] = 1).

**Note:** The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time.

**p50786**

<table>
<thead>
<tr>
<th>CUD digital input/output 5 delay time / CUD DI/DO 5 t_del</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Data type:</td>
</tr>
<tr>
<td>P-Group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for digital input/output 5 (X177.16) on the CUD.

**Dependency:** The terminal must be set as an output (p50789[1] = 1).

**Note:** The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time.

**p50787**

<table>
<thead>
<tr>
<th>CUD digital input/output 6 delay time / CUD DI/DO 6 t_del</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Data type:</td>
</tr>
<tr>
<td>P-Group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for digital input/output 6 (X177.17) on the CUD.

**Dependency:** The terminal must be set as an output (p50789[2] = 1).

**Note:** The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time.

**p50788**

<table>
<thead>
<tr>
<th>CUD digital input/output 7 delay time / CUD DI/DO 7 t_del</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Data type:</td>
</tr>
<tr>
<td>P-Group:</td>
</tr>
<tr>
<td>Not for motor type:</td>
</tr>
<tr>
<td>Min</td>
</tr>
<tr>
<td>0 [ms]</td>
</tr>
</tbody>
</table>

**Description:** Sets the delay time for digital input/output 7 (X177.18) on the CUD.

**Dependency:** The terminal must be set as an output (p50789[3] = 1).

**Note:** The level at the digital output can only change if the changed internal level remains constant for longer than the set delay time.
## 2 Parameters

### 2.2 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>p50789[0...3]</td>
<td>CUD digital inputs/outputs type / CUD DI/DO typ</td>
<td>Sets the type for the digital inputs/outputs on the CUD.</td>
<td>0: Input, 1: Output</td>
<td>[0] = DI/DO 4 (X177.15), [1] = DI/DO 5 (X177.16), [2] = DI/DO 6 (X177.17), [3] = DI/DO 7 (X177.18)</td>
</tr>
<tr>
<td>p50790</td>
<td>P2P IF operating mode / P2P op mode</td>
<td>Sets the operating mode for the peer-to-peer interface (P2P IF).</td>
<td>0: No function, 5: Peer-to-peer communication, 6: Communication with SIMOREG CCP</td>
<td>P2P IF: Peer-to-peer interface CCP: Converter Commutation Protector</td>
</tr>
<tr>
<td>p50791</td>
<td>P2P IF number of data words / P2P num words</td>
<td>Sets the number of words to be transmitted for the peer-to-peer interface (P2P IF) in &quot;Peer-to-peer communication&quot; mode (p50790 = 5).</td>
<td>Refer to: p50790</td>
<td></td>
</tr>
<tr>
<td>p50793</td>
<td>P2P IF baud rate / P2P baud rate</td>
<td>Sets the baud rate for the peer-to-peer interface (P2P IF).</td>
<td>1: 300 baud, 2: 600 baud, 3: 1200 baud, 4: 2400 baud, 5: 4800 baud</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6: 9600 baud</td>
<td>Sets the signal source for the data to be transmitted on the peer-to-peer interface (P2P IF). The transmit data is displayed in r50813[0 to 4].</td>
</tr>
<tr>
<td>7: 19200 baud</td>
<td></td>
</tr>
<tr>
<td>8: 38400 baud</td>
<td></td>
</tr>
<tr>
<td>9: 56700 baud</td>
<td></td>
</tr>
<tr>
<td>11: 93750 baud</td>
<td></td>
</tr>
<tr>
<td>13: 187500 baud</td>
<td></td>
</tr>
</tbody>
</table>

**p50794[0...4]**

**CI: P2P IF transmit data signal source / P2P tr data sig s**

**DC_CTRL**

- Can be changed: U, T
- Data type: Unsigned32 / Integer16
- P-Group: -
- Not for motor type: -
- Min - Max

**Description:** Sets the signal source for the data to be transmitted on the peer-to-peer interface (P2P IF). The transmit data is displayed in r50813[0 to 4].

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4

**Dependency:** Refer to: r50813

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0: OFF</td>
<td></td>
</tr>
<tr>
<td>1: ON</td>
<td></td>
</tr>
</tbody>
</table>

**p50795**

**P2P/CCP bus terminator / P2P/CCP bus term**

**DC_CTRL**

- Can be changed: T
- Data type: Integer16
- P-Group: -
- Not for motor type: -
- Min 0 Max 1

**Description:** Sets the bus terminator for the peer-to-peer interface and the interface to the SIMOREG CCP.

**Value:**
- 0: OFF
- 1: ON

**Note:**
- CCP: Converter Commutation Protector
- P2P: Peer-to-Peer interface

**p50797**

**P2P IF telegram monitoring time / P2P t_telegr mon**

**DC_CTRL**

- Can be changed: T
- Data type: FloatingPoint32
- P-Group: -
- Not for motor type: -
- Min 0.000 [s] Max 65.000 [s]

**Description:** Sets the telegram monitoring time for the peer-to-peer interface (P2P IF). The time set is only effective in "Peer-to-peer interface" operating mode (p50790 = 5).

- p50797 = 0:
  - Monitoring is de-activated.
- p50797 > 0:
  - Monitoring is activated.

As well as one valid telegram being received, the next valid telegram must be received within the set time. Otherwise, fault F60012 is triggered.

**Dependency:** Refer to: F60012
### 2 Parameters

#### 2.2 List of parameters

**Note:**

Telegram monitoring is activated in the following cases:
- From receipt of the first error-free telegram
- After switching on of the electronics power supply
- From receipt of the first error-free telegram after telegram monitoring has responded (i.e. telegram monitoring timeout).

The telegram monitoring time (p50797) depends on the baud rate set (p50793) The following minimum setting values are recommended for safe operation:
- 300 baud --> p50797 = 0.520 s (recommended minimum value)
- 600 baud --> p50797 = 0.260 s (recommended minimum value)
- 1200 baud --> p50797 = 0.140 s (recommended minimum value)
- 2400 baud --> p50797 = 0.080 s (recommended minimum value)
- 4800 baud --> p50797 = 0.040 s (recommended minimum value)

If the "Automatic restart" function (p50086b > 0) has been selected on the peer-to-peer communication partner, only a parameter setting p50797 > p50086 (on the communication partner) will be meaningful.

<table>
<thead>
<tr>
<th>p50798</th>
<th>BI: P2P IF signal source for triggering F60012 / P2P F60012 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>

**Description:**
Sets the signal source for triggering fault F60012 "Telegram monitoring timeout".

**Dependency:**
Refer to: F60012

<table>
<thead>
<tr>
<th>r50799[0...8]</th>
<th>P2P/CCP diagnostics / P2P/CCP diag</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>

**Dependency:**
Refer to: F60012

<table>
<thead>
<tr>
<th>Index:</th>
<th>Displays the diagnostic information for the peer-to-peer interface and the interface to SIMOREG CCP.</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Number of error-free telegrams</td>
</tr>
<tr>
<td>[1]</td>
<td>Number of erroneous telegrams</td>
</tr>
<tr>
<td>[2]</td>
<td>Number of byte frame errors</td>
</tr>
<tr>
<td>[3]</td>
<td>Number of overrun errors</td>
</tr>
<tr>
<td>[4]</td>
<td>Number of parity errors</td>
</tr>
<tr>
<td>[5]</td>
<td>Number of STX errors</td>
</tr>
<tr>
<td>[6]</td>
<td>Number of block check errors</td>
</tr>
<tr>
<td>[7]</td>
<td>Number of break errors</td>
</tr>
<tr>
<td>[8]</td>
<td>Number of timeout errors</td>
</tr>
</tbody>
</table>

**Note:**
The fault frequency is recorded with free-running counters; when a counter reaches 65535 it is reset to 0.

The diagnostic information in indexes 5, 6 and 8 is irrelevant for communication with SIMOREG CCP (p50790 = 6).

Possible causes for STX errors:
- Non-observance of start interval before STX
- STX incorrect, i.e. not equal to 02

Possible causes for timeout errors:
- Telegram monitoring timeout (p50797)
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
<th>Expert list:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50813[0...4]</td>
<td>P2P IF transmit data display / P2P tr data disp</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>Unsigned16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td></td>
<td>Displays the transmit data for the peer-to-peer interface (P2P IF). The signal source for the data to be transmitted is set via connector input p50794[0 to 4].</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4

**Dependency:**
Refer to: p50794

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
<th>Data type:</th>
<th>Dyn. index:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
<th>Expert list:</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>p50816</td>
<td>BI: P2P IF receive enable signal source / P2P recv ena sig s</td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
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<td></td>
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</tr>
<tr>
<td></td>
<td>Sets the signal source to enable data to be received on the peer-to-peer interface (P2P IF). 1 signal: Data receive enabled 0 signal: Data receive not enabled</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>p50817</td>
<td>BI: P2P IF transmit enable signal source / P2P tr ena sig s</td>
<td>T</td>
<td>-</td>
<td>2</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
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<tr>
<td></td>
<td>Sets the signal source to enable data to be transmitted on the peer-to-peer interface (P2P IF). 1 signal: Data transmission enabled 0 signal: Data transmission not enabled</td>
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</tr>
<tr>
<td>p50820</td>
<td>PPI/USS bus terminator / PPI/USS bus term</td>
<td>U, T</td>
<td>-</td>
<td>1</td>
<td>Integer16</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
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</tr>
<tr>
<td></td>
<td>Sets the bus terminator for the RS485 interface (PPI/USS, X178).</td>
<td></td>
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</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50823[0...1]</td>
<td>Electronic power supply voltage display / Electr supp V disp</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8048</td>
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<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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<td></td>
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<tr>
<td>Not for motor type: -</td>
<td>Scaling: p2001</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>- [V]</td>
<td>- [V]</td>
<td>- [V]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the voltages for the electronic power supply.
Index:
[0] = P10 (+10 V)
[1] = N10 (-10 V)
Dependency: Refer to: r50824
Refer to: F60091, F60092
Note:
For r50823[0]:
A voltage value outside the permissible limits will trigger fault F60091.
For r50823[1]:
A voltage value outside the permissible limits will trigger fault F60092.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50824</td>
<td>Electronic power supply failure duration / Electr supp t fail</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>- [ms]</td>
<td>- [ms]</td>
<td>- [ms]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the failure duration for the electronic power supply.
Dependency: Refer to: r50823

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50825[0...29]</td>
<td>Armature power unit compensation values / PU arm comp val</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
<td></td>
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</tr>
</tbody>
</table>

Description: Displays the compensation values for the armature power unit.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50826[0...15]</td>
<td>Field power unit compensation values / PU field comp val</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the compensation values for the field power unit.
2 Parameters

2.2 List of parameters

r50827

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50827</td>
<td>Internal diagnostics / Int diag</td>
<td>Displays the counter reading for internal errors.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed:</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Note:

- Displays the compensation values for the analog inputs/outputs on the Control Unit DC MASTER (CUD).

r50829[0...55]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r50829[0...55]</td>
<td>CUD compensation values / CUD calib. val</td>
<td>Displays the compensation values for the analog inputs/outputs on the Control Unit DC MASTER (CUD).</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed:</td>
<td>Access level: 4</td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
</tbody>
</table>

Note:

- Displays the compensation values for the analog inputs/outputs on the Control Unit DC MASTER (CUD).

Analog input 0 - X177.25/26 - voltage input

- [0] = Compensation value at 0 V
- [1] = Compensation value at +10 V
- [2] = Compensation value at -10 V
- [3] = Compensation value at reference value

Analog input 0 - X177.25/26 - current input

- [4] = Compensation value at 0 mA
- [5] = Compensation value at +20 mA
- [6] = Compensation value at -20 mA

Analog input 1 - X177.27/28 - voltage input

- [7] = Compensation value at reference value

Analog input 1 - X177.27/28 - current input

- [8] = Compensation value at 0 V
- [9] = Compensation value at +10 V
- [10] = Compensation value at -10 V

Analog input 2 - X177.29/30

- [12] = Compensation value at reference value

Analog input XT1.103/104 - 25 V

- [16] = Compensation value at 0 V
- [17] = Compensation value at +10 V
- [18] = Compensation value at -10 V
- [19] = Compensation value at reference value

Analog input XT1.103/104 - 80 V

- [24] = Compensation value at 0 V
- [25] = Compensation value at +80 V
- [26] = Compensation value at -80 V
- [27] = Compensation value at reference value
Analog input XT1.103/104 - 270 V
[28] = Compensation value at 0 V
[29] = Compensation value at +270 V
[30] = Compensation value at -270 V
[31] = Compensation value at reference value
Analog input 3 - X177.1/2
[32] = Compensation value at 0 V
[33] = Compensation value at +10 V
[34] = Compensation value at -10 V
[35] = Compensation value at reference value
Analog input 4 - X177.3/4
[36] = Compensation value at 0 V
[37] = Compensation value at +10 V
[38] = Compensation value at -10 V
[39] = Compensation value at reference value
Analog input 5 - X177.5/6
[40] = Compensation value at 0 V
[41] = Compensation value at +10 V
[42] = Compensation value at -10 V
[43] = Compensation value at reference value
Analog input 6 - X177.7/8
[44] = Compensation value at 0 V
[45] = Compensation value at +10 V
[46] = Compensation value at -10 V
[47] = Compensation value at reference value
Analog output 0 - X177.49/50
[48] = Compensation value for 0 V
[49] = Compensation value for +10 V
[50] = Compensation value for -10 V
[51] = Compensation value for reference value
Analog output 1 - X177.51/52
[52] = Compensation value for 0 V
[53] = Compensation value for +10 V
[54] = Compensation value for -10 V
[55] = Compensation value for reference value
The compensation values for analog outputs 0 and 1, as well as for analog inputs 3 to 6, are calculated from the measurement result + an offset of 32768.

### p50830 Thyristor diagnostics mode / Thyr_diag mode

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6865</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the thyristor diagnostics mode.

Value = 0:
The thyristor test is de-activated.

Value = 1:
The thyristors are tested when first switching on or jogging after the electronics power supply has been switched on.

Value = 2:
The thyristors are tested at each switch-on or jogging.

Value = 3:
The thyristors are tested at the next switch-on or jogging. p50830 is set to 0 if the test was completed error-free.
2 Parameters
2.2 List of parameters

Value:
0: Switched off
1: After the first ON command
2: After each ON command
3: After next ON command

Dependency:
Refer to: F60061

Note:
The thyristor test function cannot be used when supplying extremely high inductances (e.g. when supplying a field from armature terminals, supplying solenoids, etc.) and must be de-activated (p50830 = 0).

When SINAMICS DCM are connected in parallel (6 pulse or 12 pulse), thyristor diagnostics may only be selected at the master. The thyristor diagnostics is then first carried out at the master, and then automatically at all of the slaves one after the other. If a defective thyristor is detected at a SINAMICS DCM, then the corresponding fault message is initiated at this SINAMICS DCM and not at the master where thyristor diagnostics was started.

<table>
<thead>
<tr>
<th>p50831</th>
<th>Diagnostics memory trace control word / Trace STW</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T  Access level: 3</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -  Func. diagram: 8052</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -  Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -  Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -  Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>0 2 0</td>
</tr>
</tbody>
</table>

Description:
Sets the trigger resolution for the trace.

Value:
0: No trigger for start
1: Start immediately
2: Start together with STARTER trace

<table>
<thead>
<tr>
<th>p50832</th>
<th>Diagnostics memory copy recording file to memory card / Copy diag file</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T  Access level: 2</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -  Func. diagram: 8052</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -  Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -  Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -  Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>0 2 0</td>
</tr>
</tbody>
</table>

Description:
Setting for starting the procedure to copy the diagnostics file to the memory card.

Value:
0: Inactive
1: Start copying procedure
2: Copy file into User\Data folder

Note:
The value is reset automatically at the end of the copying procedure.
If a diagnostics file is empty, the file written to the memory card will also be empty.
This file will overwrite any existing file on the memory card.

<table>
<thead>
<tr>
<th>p50833</th>
<th>Device fan test / Dev fan test</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T  Access level: 2</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -  Func. diagram: 8047</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -  Unit group: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit selection: -  Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td>Scaling: -  Factory setting</td>
</tr>
<tr>
<td>Max</td>
<td>0 1 0</td>
</tr>
</tbody>
</table>

Description:
Setting to test the device fans.

Value:
0: Stop fan
1: Start fan

Dependency:
Refer to: r53135
Refer to: F60167

Note:
The status of the fans is displayed in binector outputs r53135.8 to 11.
2 Parameters

2.2 List of parameters

**r50836[0...3]**  
Voltage sensing communication error counter / V_sens comm_err

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>Unsigned32</td>
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<td>8054</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the communication error for armature and field voltage sensing.

Index:

- [0] = Number of CRC errors armature
- [1] = Number of communication errors armature
- [2] = Number of CRC errors field
- [3] = Number of communication errors field

**p50837[0...11]**  
Reset thyristor load data / Thyr_load reset

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td></td>
<td>4</td>
<td>Integer16</td>
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<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Setting to reset the thyristor load data for a thyristor.

Value:

- 0: Do not reset data
- 1: Reset data

Index:

- [0] = Thyristor X11
- [1] = Thyristor X12
- [3] = Thyristor X14
- [5] = Thyristor X16
- [6] = Thyristor X21
- [7] = Thyristor X22
- [8] = Thyristor X23
- [9] = Thyristor X24
- [10] = Thyristor X25

Note: It is only permissible to reset the thyristor load data after a thyristor has been replaced.

**p50838[0...2]**  
Diagnostics memory message number / Diag_mem msg_no

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U, T</td>
<td></td>
<td>1</td>
<td>Unsigned16</td>
<td></td>
<td>8052</td>
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<td>-</td>
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<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Sets message numbers for the diagnostics memory.

A trace is saved in the diagnostics file if one of these messages occurs.

**r50840[0...31]**  
Gating module serial number / Gate_mod ser_no.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>Unsigned8</td>
<td></td>
<td>6960</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
</tbody>
</table>

Description: Displays the serial number of the gating module.
For the Control Module, the serial number of the voltage sensing module is displayed.

r50840[0]: Serial number character 1
...

r50840[31]: Serial number character 32

For the commissioning software, the ASCII characters are displayed uncoded.

Note:
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

---

**r50841[0...31]**  
**Gating module part number / Gat_mod part no.**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:**
Displays the part number of the gating module.

For the Control Module, the part number of the voltage sensing module is displayed.

r50841[0]: Part number character 1
...

r50841[31]: Part number character 32

For the commissioning software, the ASCII characters are displayed uncoded.

Note:
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

---

**r50842[0...31]**  
**Field module serial number / Field mod ser no.**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:**
Displays the serial number of the field module.

Note:
The individual digits of the number are displayed in ASCII code in the indices.
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

---

**r50843[0...31]**  
**Field module part number / Field mod part no.**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
</tr>
</tbody>
</table>

**Description:**
Displays the part number of the field module.

Note:
The individual digits of the number are displayed in ASCII code in the indices.
An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

---

**p50899[0...6]**  
**Control blocks activation / Ctrl blocks act**

<table>
<thead>
<tr>
<th>DC_CTRL</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>Dyn. index: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>P-Group: -</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>
</tbody>
</table>

**Description:**
Setting to activate/de-activate control blocks.
### Index 0 (FP3130):
The switch-on command and the intervention of r0807.0 and r53010.2 are always active.

### Index 2 (FP6810):
The "speed actual value selection" is always active.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Control block de-activated</td>
</tr>
<tr>
<td>1</td>
<td>Control block activated</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Index</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>Speed setpoint processing (FP3105 to FP3135)</td>
</tr>
<tr>
<td>[1]</td>
<td>RFG (FP3150 to FP3155)</td>
</tr>
<tr>
<td>[2]</td>
<td>Closed-loop speed control (FP6800 to FP6820)</td>
</tr>
<tr>
<td>[3]</td>
<td>Torque limiting/Current limitation (FP6825 to FP6845, FP8040)</td>
</tr>
<tr>
<td>[4]</td>
<td>Closed-loop armature current control (FP6852 to FP6855)</td>
</tr>
<tr>
<td>[5]</td>
<td>EMF setpoint processing and control (FP6900)</td>
</tr>
<tr>
<td>[6]</td>
<td>Closed-loop field current control (FP6905 to FP6910)</td>
</tr>
</tbody>
</table>

### Note:
This parameter is only evaluated once while powering up, i.e. a change only becomes effective after a new start or after powering up with saved parameters (p0976 = 11).

The ability to de-activate control function blocks has been designed for users who set up their own control configurations using Drive Control Chart (DCC) (e.g. synchronous generator field winding instead of running a motor). De-activating control function blocks which are not needed frees up CPU time for the DCC blocks.

### r50960[0...4]
**Device fan operating hours display / Dev_fan h disp**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>- [h]</td>
<td>- [h]</td>
<td>- [h]</td>
</tr>
</tbody>
</table>

### Description:
Displays the operating hours for the device fan.

### Index:
[0] = Fan terminal XV1
[1] = Fan terminal XV2
[3] = Fan terminal XV4
[4] = Fan ON

### Dependency:
Refer to: p50961, p50962
Refer to: A60165

### Note:
The operating hours from "fan on" are only increased for the Control Module.

### p50961[0...4]
**Device fan service life / Dev_fan serv life**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>U, T</td>
<td>U, T</td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Data type:</th>
<th>FloatingPoint32</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</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 [h]</td>
<td>1000000 [h]</td>
<td>[0...3] 30000 [h]</td>
</tr>
<tr>
<td>[4] 0 [h]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Description:
Sets the service life for the device fan.

### Index:
[0] = Fan terminal XV1
[1] = Fan terminal XV2
[3] = Fan terminal XV4
[4] = Fan ON

### Dependency:
Refer to: r50960, p50962
Refer to: A60165

### Note:
An appropriate alarm is issued 500 hours before the set service life expires.
### p50962[0...4]
**Device fan reset operating hours / Dev_fan reset h**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>8045</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<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</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to reset the operating hours of the device fan that have accumulated.

**Value:**
- 0: Inactive
- 1: Reset

**Index:**
- [0] = Fan terminal XV1
- [1] = Fan terminal XV2
- [2] = Fan terminal XV3
- [3] = Fan terminal XV4
- [4] = Fan ON

**Dependency:** Refer to: r50960, p50961

**Note:** Procedure to reset the operating hours:
Set p50962[x] = 1
The parameter is automatically set to zero after this is done.

### p50963
**Behavior of the fan control / Behavior fan ctrl**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Integer16</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<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</td>
<td>1</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Behavior of the fan control:
- 0: The fan control takes into account the temperature sensor.
- 1: The fan control does not take into account the temperature sensor.

**Value:**
- 0: The fan control takes into account the temperature sensor.
- 1: The fan control doesn't take into account the temperature sensor

**Dependency:** Refer to: r50960, p50961

**Note:** Setting 1:
- The fan is only switched off after the parameterized fan run-on time, independent of the various temperature measurements and independent of the calculated thyristor temperature rise (=barrier layer temperature of the thyristors).
- As a consequence, it is also possible to acknowledge a fan fault even at ambient temperatures > 35°C.

### p51117[0...15]
**BI: Binector-connector converter signal source / Bin/con sig s**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>UnsIGNED32 / Binary</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<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>-</td>
<td>-</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal sources for the binector inputs on the binector-connector converter.

**Dependency:** Refer to: r52620
2 Parameters

2.2 List of parameters

### p51118 Invert binector-connector converter signals / Bin/con sig inv

**Parameter:**
- **DC_CTRL**
- **Can be changed:** U, T
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -

**Description:** Setting to invert the individual binector inputs of the binector connector converter.

**Dependency:** Refer to: p51117, r52620

**Note:**
- **BI:** Binector Input
- **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>BI p51117[0]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>BI p51117[1]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>BI p51117[2]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>BI p51117[3]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>BI p51117[4]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>BI p51117[5]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>BI p51117[6]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>BI p51117[7]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>BI p51117[8]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>BI p51117[9]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>BI p51117[10]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>BI p51117[11]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>BI p51117[12]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>BI p51117[13]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>BI p51117[14]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>BI p51117[15]</td>
<td>Inverted</td>
<td>Not inverted</td>
<td>-</td>
</tr>
</tbody>
</table>

### r51560[0...1] CCP software version / CCP SW version

**Parameter:**
- **DC_CTRL**
- **Can be changed:** -
- **Data type:** FloatingPoint32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -

**Description:** Displays the software version for the Converter Commutation Protector (CCP).

**Dependency:**
- **Index 0:** CCP software version
- **Index 1:** Version of the CCP boot sector software

**Note:**
- **BI:** Binector Input

### r51569[0...15] CCP serial number / CCP ser no.

**Parameter:**
- **DC_CTRL**
- **Can be changed:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -

**Description:** Displays the serial number of the Converter Commutation Protector (CCP).

**Note:**
- The individual digits of the number are displayed in ASCII code in the indices.
- An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.
## 2 Parameters

### 2.2 List of parameters

#### r51570 CCP order number / CCP Order No.

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the order number (MLFB) of the connected Converter Commutation Protector (CCP).</td>
<td>0: No CCP connected</td>
</tr>
<tr>
<td></td>
<td>250: 6RA7085-6FC00-0</td>
</tr>
<tr>
<td></td>
<td>251: 6RA7091-6FC00-0</td>
</tr>
<tr>
<td></td>
<td>252: 6RA7095-6FC00-0</td>
</tr>
<tr>
<td></td>
<td>253: 6RA7090-6KC00-0</td>
</tr>
<tr>
<td></td>
<td>254: 6RA7095-6KC00-0</td>
</tr>
</tbody>
</table>

#### r51571 CCP rated supply voltage / CCP V_rated

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the rated supply voltage according to the rating plate of the Converter Commutation Protector (CCP).</td>
<td>- [V] - [V] - [V]</td>
</tr>
</tbody>
</table>

#### r51572 CCP rated current / CCP I_rated

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the rated current according to the rating plate of the Converter Commutation Protector (CCP).</td>
<td>- [A] - [A] - [A]</td>
</tr>
</tbody>
</table>

#### r51574.0...12 CO/BO: CCP state / CCP state state

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display and connector output for the state of the Converter Commutation Protector (CCP).</td>
<td>- -</td>
</tr>
</tbody>
</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>Voltage at U, V, W ok</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>01</td>
<td>Voltage at C - D greater than +100 V</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>02</td>
<td>Voltage at C - D less than -100 V</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>03</td>
<td>Turn-off capacitors have reached the setpoint voltage</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>04</td>
<td>Turn-off in progress</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>05</td>
<td>Connection between parallel CCPs OK</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>08</td>
<td>Connector X165_2 (at DCM) is connected with X165 (at CCP)</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>09</td>
<td>I2t value voltage limiting chopper 1 too high</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>I2t value voltage limiting chopper 2 too high</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Memory for technical data for CCP OK</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Chopper capacitors pre-charging completed</td>
<td>Yes</td>
<td>No</td>
<td>6970</td>
</tr>
</tbody>
</table>
### 2.2 List of parameters

#### r51575 CO: CCP I2t value voltage limiting chopper 1 / CCP I2t chopper 1

**Description:** Displays the I2t value for the voltage limiting chopper 1 for Converter Commutation Protector (CCP).

#### r51576 CO: CCP I2t value voltage limiting chopper 2 / CCP I2t chopper 2

**Description:** Displays the I2t value for the voltage limiting chopper 2 for Converter Commutation Protector (CCP).

#### p51577 CCP chopper voltage setpoint response threshold upper / CCP V_set thr up

**Description:** Sets the upper response threshold of the voltage limiter implemented in the CCP. During the turn-off operation of the CCP when reducing the armature current, this limits the counter voltage that is created - and which is also necessary - to a non-hazardous value for the basic device and for the associated CCP.

**Note:**
- CCP: Converter Commutation Protector
- The parameter is set automatically during the "optimization run for CCP" (p50051 = 30).
- The correct setting of this parameter can be taken from the following reference: SIMOREG CCP Operating Instructions

#### p51578 CCP turn-off capacitors pre-charging voltage setpoint / C pre-ch V_set

**Description:** Sets the minimum charging voltage required for the turn-off capacitors used in the CCP to successfully turn off the thyristors. This value is used as setpoint for the two-level controller, which precharges the turn-off capacitors from the line supply. The maximum pre-charging voltage that can be reached is limited by the average rectified value of the line voltage that is actually connected.

**Note:**
- CCP: Converter Commutation Protector
- The parameter is set automatically during the "optimization run for CCP" (p50051 = 30).
- The correct setting of this parameter can be taken from the following reference: SIMOREG CCP Operating Instructions
2 Parameters

2.2 List of parameters

r51579.0...7  CO/BO: CCP command / CCP command

| DC_CTRL | Can be changed: - Calculated: - Access level: 3
| Data type: Unsigned16 Dyn. index: - Func. diagram: 6970 |
| P-Group: - Unit group: - Unit selection: - |
| Not for motor type: - Scaling: - Expert list: 1 |
| Min Max Factory setting |

Description: Display and connector output for the command from the SINAMICS DCM to the SIMOREG CCP.

Note: CCP: Converter Commutation Protector

Bit field: Bit Signal name 1 signal 0 signal FP
00 Firing the turn-off thyristors Yes No -
01 Line voltage (armature) in the tolerance range Yes No -
02 CCP connected to the parallel switching master Yes No -
03 Line contactor ON Yes No -
04 Torque direction I active Yes No -
05 Torque direction II active Yes No -
06 Reserved (always 1) Yes No -
07 Reserved (always 1) Yes No -

Note: CCP: Converter Commutation Protector

p51580  Commutation monitoring control word / Commut_monit STW

| DC_CTRL | Can be changed: T Calculated: - Access level: 3 |
| Data type: Unsigned16 Dyn. index: - Func. diagram: 6865 |
| P-Group: - Unit group: - Unit selection: - |
| Not for motor type: - Scaling: - Expert list: 1 |
| Min Max Factory setting |

Description: Sets the criterion to detect a commutation failure for the commutation monitoring.

3 decision criteria are available in order to identify commutation failure. For test purposes, these criteria can be individually set using these parameters.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Criterion 1 (signal from thyristor blocking voltage) Yes No 6865
01 Criterion 2 (curvature of the current cusp) Yes No 6865
02 Criterion 3 (amplitude of the current actual value) Yes No 6865

Note: The converter commutation is continuously monitored.

If a commutation failure is detected, fault F60030 is initiated and thyristor turn-off is initiated by the CCP (if available).

Re bit 00, 01: These criteria are only effective if a CCP (Converter Commutation Protector) is being used.

p51583  CCP test turn-off command / CCP turn-off cmdn

| DC_CTRL | Can be changed: U, T Calculated: - Access level: 3 |
| Data type: Integer16 Dyn. index: - Func. diagram: 6970 |
| P-Group: - Unit group: - Unit selection: - |
| Not for motor type: - Scaling: - Expert list: 1 |
| Min Max Factory setting |

Description: Setting to issue a turn-off command to the Converter Commutation Protector (CCP) for test purposes.

Value: 0: No turn-off cmdn
1: Issue in torque direction I
2: Issue in torque direction II

Notice: After a turn-off command is issued to the CCP, this parameter automatically returns to the value 0.
### 2.2 List of parameters

#### p51591[0...n] Armature inductance reduction factor / \( L_{\text{armat red fact}} \)

**DC_CTRL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**P-Group:** -

**Not for motor type:** -

**Min** | **Max**
---|---
10 [%] | 100 [%]

**Dependency:**

Refer to: p50111

**Note:**

The parameter is set automatically during the "optimization run for pre-control and the current controller for the armature converter" (p50051 = 25).

---

#### p51592[0...n] Armature commutating inductance / \( L_{\text{Arm Lk}} \)

**DC_CTRL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**P-Group:** -

**Not for motor type:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [mH]</td>
<td>1000.0 [mH]</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p51595

**Note:**

The parameter is set automatically during the "optimization run for pre-control and the current controller for the armature converter" (p50051 = 25).

---

#### p51594[0...n] Interphaze inductance in 12-pulse operation / \( L_{\text{intph 12-pulse}} \)

**DC_CTRL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>3</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**P-Group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0 [mH]</td>
<td>1000000.0 [mH]</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p51595

**Note:**

The parameter is set automatically during the "optimization run for pre-control and the current controller for the armature converter" (p50051 = 25).

---

#### p51595[0...n] Interphaze inductance reduction factor / \( L_{\text{intph red fact}} \)

**DC_CTRL**

<table>
<thead>
<tr>
<th>Description</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: U, T</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32

**P-Group:** -

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 [%]</td>
<td>100 [%]</td>
</tr>
</tbody>
</table>

**Dependency:**

Refer to: p51594

**Note:**

The parameter is set automatically during the "optimization run for pre-control and the current controller for the armature converter" (p50051 = 25).
### 2.2 List of parameters

#### p51596[0...n] Interphase resistance in 12-pulse operation / R_intph 12-pulse

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<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>0.000 [ohm]</td>
<td>1000.000 [ohm]</td>
<td>0.000 [ohm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the resistance of an interphase transformer in 12-pulse operation.

**Note:** The parameter is set automatically during the "optimization run for pre-control and the current controller for the armature converter" (p50051 = 25).

#### p51597[0...n] Field inductance reduction factor / L_field red fact

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
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<td>Dyn. index:</td>
<td>DDS, p0180</td>
<td>Func. diagram:</td>
<td>6910</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Expert list:</td>
<td>1</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>10 [%]</td>
<td>100 [%]</td>
<td>100 [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the reduction factor for the current-dependent field inductance. At 100% motor rated current (p50102), the field inductance is lower than it is at field current 0 by this factor.

**Dependency:** Refer to: p50116

**Note:** The parameter is set automatically during the "optimization run for pre-control and the current controller for the field current controller" (p50051 = 24).

#### r51598 Short-circuit voltage Uk, per unit / V_sh-cct Uk p.u.

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-</td>
<td>Func. diagram:</td>
<td>6854</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling:</td>
<td>PERCENT</td>
<td>Expert list:</td>
<td>1</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>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Displays the per unit short-circuit voltage of the line supply. The value is calculated from the commutation inductance (p51592) and the rated converter data (In = r50072[1], Vn = p50078[0], fn = r50017).

#### p51607[0...n] BI: Setpoint processing reduction signal source / Red sig s

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>T</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td>Dyn. index:</td>
<td>CDS, p0170</td>
<td>Func. diagram:</td>
<td>3135</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<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>-</td>
<td>-</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the signal source for activating/de-activating the reduction factor for the speed setpoint.

**Dependency:** Refer to: p51608, r52194, r52195

**Note:** Dependent upon binector input (p51607):
1 signal:
The reduction factor (p51608) is de-activated (r52194 = r52195).
0 signal:
The reduction factor (p51608) is activated (r52194 = r52195 x p51608).
2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p51608[0...n]</code></td>
<td>Setpoint processing reduction factor / Red factor</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td></td>
<td>Dyn. index: DDS, p0180</td>
<td>Func. diagram: 3135</td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td></td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td>Min</td>
<td></td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td>0.00 [%]</td>
<td>100.00 [%]</td>
<td>15.00 [%]</td>
<td></td>
</tr>
</tbody>
</table>

Sets the reduction factor for the speed setpoint in the context of setpoint processing.

Dependency:
Dependent upon binector input (p51607):
1 signal:
The reduction factor (p51608) is not applied (r52194 = r52195).
0 signal:
The reduction factor (p51608) is applied (r52194 = r52195 x p51608).
Refer to: p51607, r52194, r52195

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p51616</code></td>
<td>E stop response / E stop response</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td></td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2070</td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
<td>Unit 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>

Sets the response of the control to the triggering of an E stop.

Value:
0: E stop has the same effect as OFF2
1: E stop triggers immediate pulse inhibit

Note:
If value = 0:
E stop has the same effect as OFF2.
If value = 1:
E stop interrupts the firing pulse sequence immediately. The process does not wait for Ia = 0 and Alpha W pulses are not emitted.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p51618</code></td>
<td>LOCAL mode enable behavior / LOCAL enab behav</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td></td>
<td>Dyn. index: -</td>
<td>Func. diagram: 2580</td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
<td>Unit 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>

Sets the behavior for enable via terminal X177.13 in the LOCAL mode.

Value:
0: Terminal X177.13 is not effective in the LOCAL mode
1: Terminal X177.13 is effective in the LOCAL mode

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>p51619[0...n]</code></td>
<td>BI: Signal source for switching on line contactor / Line cont ON sig s</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</td>
<td></td>
<td>Dyn. index: CDS, p0170</td>
<td>Func. diagram: 2070</td>
</tr>
<tr>
<td>P-Group: -</td>
<td></td>
<td>Unit 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>53081.0</td>
<td></td>
</tr>
</tbody>
</table>

Sets the signal source for the "Line contactor ON" relay output (XR1.109/110).
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Recommendation</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51651[0...n]</td>
<td>Speed controller start pulse positive setpoint / Start pul pos set</td>
<td>The value can also be used as an integrator setting value for the speed controller.</td>
<td>2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>DC_CTRL</td>
<td>100.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>p51652[0...n]</td>
<td>Speed controller start pulse negative factor / Start pul neg fact</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>DC_CTRL</td>
<td>0.00 [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td>200.00 [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>50.00 [%]</td>
</tr>
<tr>
<td>p51653[0...n]</td>
<td>Speed controller start pulse negative setpoint / Start pul neg set</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Can be changed: U, T</td>
<td>Calculated: -</td>
<td></td>
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<td>-100.00 [%]</td>
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<tr>
<td>Max</td>
<td>Factory setting</td>
<td>100.00 [%]</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.00 [%]</td>
</tr>
<tr>
<td>p51655</td>
<td>CI: Speed controller start pulse positive signal source / Start p pos sig s</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td>DC_CTRL</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td>52451[0]</td>
<td></td>
</tr>
<tr>
<td>p51656</td>
<td>CI: Speed controller start pulse negative signal source / Start p neg sig s</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
<td></td>
</tr>
<tr>
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<td>DC_CTRL</td>
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<td></td>
</tr>
<tr>
<td>Max</td>
<td>Factory setting</td>
<td>52452[0]</td>
<td></td>
</tr>
</tbody>
</table>

---

**Notes:**

- **DC_CTRL**
- **Min**
- **Max**
- **Unit selection**
- **Expert list**
- **Unit group**
- **P-Group**
- **Dyn. index**
- **Func. diagram**
- **Calculated**
- **Can be changed**
- **Not for motor type**
- **Scaling**

---

**Description:**

- Sets the setpoint for the positive start pulse on the speed controller.
- Sets the factor for the start pulse when the setpoint is negative.
- Sets the setpoint for the negative start pulse on the speed controller.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>p51657[0...n] BI: Speed controller start pulse pos/neg changeover signal source / Start ch sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</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>
<tr>
<td><strong>Description:</strong> Sets the signal source for changing over the setpoint between positive and negative start pulses on the speed controller.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51660 BI: Signal source for master switch travel command 1 / Trav comm 1 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</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>
<tr>
<td><strong>Description:</strong> Sets the signal source for travel command 1 on the 4-step master switch.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51661 BI: Signal source for master switch travel command 2 / Trav comm 2 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</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>
<tr>
<td><strong>Description:</strong> Sets the signal source for travel command 2 on the 4-step master switch.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51662 BI: Signal source for master switch setpoint step S2 / Set step S2 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</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>
<tr>
<td><strong>Description:</strong> Sets the signal source for changing over to setpoint step S2 on the 4-step master switch.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51663 BI: Signal source for master switch setpoint step S3 / Set step S3 sig s</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
</tr>
<tr>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type: Unsigned32 / Binary</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>
<tr>
<td><strong>Description:</strong> Sets the signal source for changing over to setpoint step S3 on the 4-step master switch.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Description</th>
<th><strong>DC_CTRL</strong></th>
<th><strong>Can be changed:</strong></th>
<th><strong>Data type:</strong></th>
<th><strong>Dyn. index:</strong></th>
<th><strong>Access level:</strong></th>
<th><strong>Unit group:</strong></th>
<th><strong>Unit selection:</strong></th>
<th><strong>Expert list:</strong></th>
<th><strong>Min</strong></th>
<th><strong>Max</strong></th>
<th><strong>Factory setting</strong></th>
<th><strong>Dyn. index:</strong></th>
<th><strong>Func. diagram:</strong></th>
<th><strong>Unit group:</strong></th>
<th><strong>Unit selection:</strong></th>
<th><strong>Expert list:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets the signal source for changing over to setpoint step S4 on the 4-step master switch.</td>
<td>p51664</td>
<td>BI: Signal source for master switch setpoint step S4 / Set step S4 sig s</td>
<td>T</td>
<td>Unsigned32 / Binary</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td></td>
<td>-</td>
<td>3105</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sets the setpoint for setpoint step S1 on the 4-step master switch.</td>
<td>p51665</td>
<td>Master switch setpoint step S1 value / Set step S1 value</td>
<td>U, T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>110.00 [%]</td>
<td>10.00 [%]</td>
<td>-</td>
<td>3105</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sets the setpoint for setpoint step S2 on the 4-step master switch.</td>
<td>p51666</td>
<td>Master switch setpoint step S2 value / Set step S2 value</td>
<td>U, T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>110.00 [%]</td>
<td>25.00 [%]</td>
<td>-</td>
<td>3105</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sets the setpoint for setpoint step S3 on the 4-step master switch.</td>
<td>p51667</td>
<td>Master switch setpoint step S3 value / Set step S3 value</td>
<td>U, T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>110.00 [%]</td>
<td>40.00 [%]</td>
<td>-</td>
<td>3105</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Sets the setpoint for setpoint step S4 on the 4-step master switch.</td>
<td>p51668</td>
<td>Master switch setpoint step S4 value / Set step S4 value</td>
<td>U, T</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>0</td>
<td>110.00 [%]</td>
<td>100.00 [%]</td>
<td>-</td>
<td>3105</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51700[0...1]</td>
<td>CI: Signal source for connector recorder function / Rec fct con sig s</td>
<td>Refer to: p51701, p51702, p51703, p51704, p51705, p51706</td>
<td>[0] = Signal source for the first connector to be recorded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Signal source for the second connector to be recorded</td>
<td></td>
</tr>
<tr>
<td>p51701[0...1]</td>
<td>BI: Signal source for binector recorder function / Rec fct bin sig s</td>
<td>Refer to: p51700, p51702, p51703, p51704, p51705, p51706</td>
<td>[0] = Signal source for the first binector to be recorded</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Signal source for the second binector to be recorded</td>
<td></td>
</tr>
<tr>
<td>p51702</td>
<td>Recorder function channel selection / Rec fct sel</td>
<td>Refer to: p51700, p51701, p51703, p51704, p51705, p51706</td>
<td></td>
</tr>
<tr>
<td>p51703</td>
<td>Recorder function recording interval / Rec fct t_rec</td>
<td>Refer to: p51700, p51701, p51702, p51704, p51705, p51706</td>
<td></td>
</tr>
</tbody>
</table>

#### DC_CTRL

- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** -
- **Max:** -

#### Data

- **Dyn. index:** -
- **Unit group:** -
- **Scaling:** PERCENT
- **Expert list:** 1
- **Factory setting:** 0

#### 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</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Channel 1</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Channel 2</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Channel 3</td>
<td>Active</td>
<td>Not active</td>
<td>-</td>
</tr>
</tbody>
</table>

#### Recorder function recording interval / Rec fct t_rec

- **Can be changed:** U, T
- **Data type:** Unsigned32
- **P-Group:** -
- **Not for motor type:** -
- **Min:** 1 [s]
- **Max:** 1000 [s]

#### Description:

Sets the recording interval, during which the signals selected with the channel selection parameters (p51702.0 to 3) are scanned and saved internally.

#### Dependency:

Refer to: p51700, p51701, p51702, p51704, p51705, p51706
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p51704</strong> Recorder function save interval / Rec fct t_save</td>
<td>Sets the save interval, during which the signals recorded internally are saved to the following recording file: \USER\SINAMICS\DATA\LOG\Track.csv</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min 1</td>
<td>Max 60</td>
</tr>
<tr>
<td>Notice:</td>
<td>Factory setting 1</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51700, p51701, p51702, p51703, p51705, p51706</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p51705</strong> Start/stop recorder function / Rec fct StartStop</td>
<td>Setting to start and stop the recorder function.</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min 0</td>
<td>Max 2</td>
</tr>
<tr>
<td>Notice:</td>
<td>Factory setting 0</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51700, p51701, p51702, p51703, p51704, p51706</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p51706</strong> Recorder function number of entries / Rec fct num ent</td>
<td>Sets the number of entries in the recorder function's recording file.</td>
</tr>
<tr>
<td>Data type: Unsigned32</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min 10</td>
<td>Max 100000</td>
</tr>
<tr>
<td>Notice:</td>
<td>Factory setting 3600</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51700, p51701, p51702, p51703, p51704, p51705</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p51780</strong> Fault message response delay time / F delay_time</td>
<td>All fault message responses are not immediately initiated, but only after a parameterizable delay time.</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td>Min 0.000 [s]</td>
<td>Max 60.000 [s]</td>
</tr>
<tr>
<td>Notice:</td>
<td>Factory setting 0.000 [s]</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51700, p51701, p51702, p51703, p51704, p51705</td>
</tr>
</tbody>
</table>
## Parameters

### 2.2 List of parameters

**Note:** Active faults are signaled at r2139.3 and r3114.10.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>p51790</strong></td>
<td>BI: Topology switchover signal source / Top_switch s_src</td>
<td></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned32 / Binary</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Factory setting</td>
<td>0</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the signal source to select the required power unit topology.</td>
<td></td>
</tr>
</tbody>
</table>

| **p51791** | BI: Topology switchover feedback signal source / Top_sw fdbk s_src | | |
| DC_CTRL | Can be changed: T | Calculated: - |
| | Data type: Unsigned32 / Binary | Dyn. index: - |
| | P-Group: - | Unit group: - |
| | Not for motor type: - | Scaling: - |
| | Min | Max |
| | - | - |
| | Factory setting | 0 |
| Description: | Sets the signal source for the feedback signal of the active power unit topology. | |

| **p51792** | Topology switchover feedback signal stabilization time / Topo_sw t_stab | | |
| DC_CTRL | Can be changed: U, T | Calculated: - |
| | Data type: FloatingPoint32 | Dyn. index: - |
| | P-Group: - | Unit group: - |
| | Not for motor type: - | Scaling: - |
| | Min | Max |
| | 0 [ms] | 1000 [ms] |
| | Factory setting | 0 [ms] |
| Description: | Sets the stabilization time for the feedback signal of the active power unit topology. | |

| **p51793** | Topology switchover feedback signal duration / Topo_sw fdbk t_sig | | |
| DC_CTRL | Can be changed: U, T | Calculated: - |
| | Data type: FloatingPoint32 | Dyn. index: - |
| | P-Group: - | Unit group: - |
| | Not for motor type: - | Scaling: - |
| | Min | Max |
| | 0 [ms] | 10000 [ms] |
| | Factory setting | 100 [ms] |
| Description: | Sets the maximum duration of the power unit topology switchover. | |

| **p51794** | Topology switchover armature converter mode of operation 2 / Topo_sw mode 2 | | |
| DC_CTRL | Can be changed: T | Calculated: - |
| | Data type: Integer16 | Dyn. index: - |
| | P-Group: - | Unit group: - |
| | Not for motor type: - | Scaling: - |
| | Min | Max |
| | 0 | 42 |
| | Factory setting | 0 |
| Description: | Sets the mode of operation of the armature converter for power unit topology 2. | |
| Value: | Standard mode of operation | |
| | Sole power unit 1-phase | 0 |
| | Sole power unit 3-phase | 3 |
| | 12-pulse parallel, firing angle from the master | 21 |
| | 12-pulse parallel, firing angle master/slave | 22 |
| | 6-pulse serial, firing angle from the master | 31 |
| | 6-pulse serial with sequential phase control | 32 |
2 Parameters

2.2 List of parameters

41: 12-pulse serial, firing angle from the master
42: 12-pulse serial with sequential phase control

Dependency:
Refer to: p51795

Note:
Comments, the same as for p51799

p51795  Topology switchover power unit topology position 2 / Topo_sw pos 2

Can be changed: T  Calculated: -  Access level: 2
Data type: Integer16  Dyn. index: -  Func. diagram: 9360
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min  Max  Factory setting
0  45  0

Description:
Sets the position of the power unit in converter topology 2.

Value:
0: Parallel interface not active
1: Power unit independent/CUD right
11: 6-pulse parallel master
12: 6-pulse parallel slave
13: 6-pulse parallel slave/replacement master
21: 12-pulse parallel master
22: 12-pulse parallel slave
23: 12-pulse parallel, slave parallel to master
24: 12-pulse parallel, slave parallel to slave
31: 6-pulse serial master
32: 6-pulse serial slave
33: 6-pulse serial parallel to master
34: 6-pulse serial parallel to slave
35: 6-pulse serial master, slave is a diode bridge
41: 12-pulse serial master
42: 12-pulse serial slave
43: 12-pulse serial parallel to master
44: 12-pulse serial parallel to slave
45: 12-pulse serial master, slave is a diode bridge

Dependency:
Refer to: p51799

Note:
Comments, the same as for p51800

p51797[0...1]  Sequential phase control switch-on threshold/hysteresis / Seq ph ctr on/hys

Can be changed: T  Calculated: -  Access level: 3
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: 6860
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: PERCENT  Expert list: 1
Min  Max  Factory setting
5 [%]  100 [%]  [0] 35 [%]
[1] 30 [%]

Description:
Sets the switch-on threshold and hysteresis for the phase sequence control.
The values are referred to the rated device current r50072[1].

Index:
[0] = Switch-on threshold
[1] = Hysteresis

Dependency:
Refer to: p51799

Note:
The switch-off threshold is calculated as follows:
Switch-off threshold = switch-on threshold - hysteresis
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Parameter Name</th>
<th>Description</th>
<th>Value</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51798</td>
<td>Armature converter voltage diode bridge / la_convert U diode</td>
<td>Sets the line voltage at the diode bridge for a 6-pulse/12-pulse series circuit of a SINAMICS DCM with an uncontrolled rectifier (diode bridge).</td>
<td></td>
<td>Refer to: p51797, p51800</td>
</tr>
<tr>
<td>p51799</td>
<td>Armature converter mode of operation / la_conv mode_op</td>
<td>Sets the mode of operation of the armature converter</td>
<td></td>
<td>Refer to: p51797, p51800</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51800</td>
<td>Power unit topology position / PU topo pos</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9350</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit 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>45</td>
<td>0</td>
</tr>
</tbody>
</table>

- **Description:** Sets the position of the power unit in the converter topology.
- **Value:**
  - 0: Parallel interface not active
  - 1: Power unit independent/CUD right
  - 11: 6-pulse parallel master
  - 12: 6-pulse parallel slave
  - 13: 6-pulse parallel slave/replacement master
  - 21: 12-pulse parallel master
  - 22: 12-pulse parallel slave
  - 23: 12-pulse parallel, slave parallel to master
  - 24: 12-pulse parallel, slave parallel to slave
  - 31: 6-pulse serial master
  - 32: 6-pulse serial slave
  - 33: 6-pulse serial parallel to master
  - 34: 6-pulse serial parallel to slave
  - 35: 6-pulse serial master, slave is a diode bridge
  - 41: 12-pulse serial master
  - 42: 12-pulse serial slave
  - 43: 12-pulse serial parallel to master
  - 44: 12-pulse serial parallel to slave
  - 45: 12-pulse serial master, slave is a diode bridge

- **Dependency:** Refer to: p51799

- **Note:**
  - If value = 0:
    - The parallel connection interface is inactive, the hardware does not have to be connected. The power unit operates alone.
  - If value = 1:
    - a) Several converters are connected with one another via the parallel interface. The power units operate independently of one another. Data exchange via the parallel interface is only used to exchange BICO signals.
    - b) At a CUD in the right-hand slot, a value of 1 must always be set.
  - For values > 1:
    - Several converters are connected with one another via the parallel interface. The power units are also connected with one another and operate together (series connection, parallel connection). Data exchange via the parallel interface allows the power units to operate together and is additionally used to exchange BICO signals.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51801</td>
<td>Parallel interface number of transmit data / Par IF num tr data</td>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9355</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit 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>0</td>
</tr>
</tbody>
</table>

- **Description:** Sets the number of words to be transmitted on the parallel interface.
- **Value:**
  - 0: 0 words
  - 4: 4 words
  - 8: 8 words
  - 12: 12 words
  - 16: 16 words
2 Parameters

2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51802</td>
<td>Parallel interface number of power units / Par_IF PU qty</td>
<td>Can be changed: T  Calculated: -  Access level: 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned8  Dyn. index: -  Func. diagram: 9350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -  Unit group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1  16  1</td>
</tr>
</tbody>
</table>

**Description:**
Sets the number of converters whose power units operate together in the selected converter topology (p51800).

**Note:**
For a 6-pulse parallel connection (p51800 = 11, 12 or 13) and activated redundant operation (p51803 = 1), then the power units may fail (e.g. go into a fault condition). In this operating mode, using this parameter, the minimum number of power units must be set which must be ready for operation.

In all other cases, the number of power units that operate together must be precisely set.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51803</td>
<td>Parallel interface activation of redundancy mode / Par IF redund mod</td>
<td>Can be changed: T  Calculated: -  Access level: 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Integer16  Dyn. index: -  Func. diagram: 9350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -  Unit group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -  Scaling: -  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0  2  0</td>
</tr>
</tbody>
</table>

**Description:**
Setting to activate/de-activate redundancy mode for the parallel interface.

**Value:**
0: Deactivated
1: Activated armature
2: Activated armature + field

**Note:**
When a SINAMICS DCM is operated together with a SIMOREG DC-MASTER Converter Commutation Protector (CCP), then the redundant mode must be deactivated.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51804[0...15]</td>
<td>CI: Parallel interface slave transmit data / PI slave tr data</td>
<td>Can be changed: U, T  Calculated: -  Access level: 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Data type: Unsigned32 / Integer16  Dyn. index: -  Func. diagram: 9355</td>
</tr>
<tr>
<td></td>
<td></td>
<td>P-Group: -  Unit group: -  Unit selection: -</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type: -  Scaling: 4000H  Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min  Max  Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-  -  0</td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal sources for transmit data when operating the device as a slave on the parallel interface.

**Index:**
[0] = Word 1  
[1] = Word 2  
[10] = Word 11  
[14] = Word 15  
2 Parameters

2.2 List of parameters

**p51805 Parallel interface bus terminator / Par IF bus term**

<table>
<thead>
<tr>
<th>Description:</th>
<th>Setting to activate/de-activate the bus terminator on the parallel interface.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value:</td>
<td>0: Bus terminator OFF</td>
</tr>
<tr>
<td></td>
<td>1: Bus terminator ON</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51806</td>
</tr>
</tbody>
</table>

**p51806 Parallel interface bus address / Par IF bus addr**

| Description: | Sets the bus address for the parallel connection of devices. |
| Dependency:  | Refer to: p51805 |

**p51807 Parallel interface telegram monitoring failure time / Telegr mon t_fail**

| Description: | Sets the permissible telegram failure time for the parallel interface. This setting means that every device connected to the parallel switching interface can monitor whether it is connected to the parallel switching interface. If a telegram is not received from any other device connected to the parallel switching interface for longer than the set time, then BICO output r53310.0 is set to 1, and also fault F60014 is initiated in the factory setting. |
| Note:        | Telegram monitoring is active in the following cases: |
|             | - From the first error-free telegram received after the electronic power supply has been switched on The telegram can be received from any device. |
|             | - From the first telegram received error-free after the telegram monitoring has responded (as a result of the failure time expiring). |
| Value:       | 0.000 [s] 65.000 [s] 0.100 [s] |
| Dependency:  | Refer to: p50099, r53310 |
|             | Refer to: F60014 |
2 Parameters

2.2 List of parameters

---

**p51808**

**BI: Parallel interface signal source for F60014 / P IF F60014 sig s**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>T</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned32 / Binary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 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>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>53310.0</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for triggering fault F60014 "Telegram monitoring timeout".
The fault is triggered on a 1 signal.

**Dependency:**
Refer to: r53310
Refer to: F60014

---

**r51809[0...4]**

**Parallel interface diagnostic information / Par IF diag info**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 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>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 diagnostic information for the parallel interface.

**Index:**
- [0] = Telegrams transmitted without errors
- [1] = Telegrams received without errors
- [2] = Transmission error
- [3] = Receive error
- [4] = Timeouts

**Dependency:**
Refer to: p51807

**Note:**
The counters are reset to 0 at POWER ON.
The counters restart at 0 after reaching a value of 65535.

---

**r51810**

**Parallel interface activity display / Par IF act disp**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can be changed:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculated:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyn. index:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit 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>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 activities on the individual stations on the parallel interface.

**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>Station 1 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Station 2 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Station 3 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Station 4 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Station 5 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Station 6 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Station 7 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Station 8 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Station 9 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Station 10 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Station 11 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Station 12 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Station 13 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Station 14 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>14</td>
<td>Station 15 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>15</td>
<td>Station 16 transmitting data</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

r51811  Parallel interface CAN diagnostic information / PI CAN diag info

table

<table>
<thead>
<tr>
<th>Bit</th>
<th>Bit name</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Abort acknowledge flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>01</td>
<td>Write denied flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>02</td>
<td>Wake-up flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>03</td>
<td>Received msg lost flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>04</td>
<td>Bus-off condition flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>05</td>
<td>Error passive mode flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>06</td>
<td>Warning level flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>07</td>
<td>Form error flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>08</td>
<td>Bit error flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>09</td>
<td>Stuck at dominant bit</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>10</td>
<td>CRC error</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>11</td>
<td>Stuff bit error</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>12</td>
<td>ACK error</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>13</td>
<td>Bus-off status</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>14</td>
<td>Error passive state</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>15</td>
<td>Warning status</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
</tbody>
</table>

r51813[0...15]  Parallel interface transmit data display / PI trans data disp

<table>
<thead>
<tr>
<th>Index</th>
<th>Bit</th>
<th>Bit name</th>
<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>[0]</td>
<td>= Word 1</td>
<td>Abort acknowledge flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[1]</td>
<td>= Word 2</td>
<td>Write denied flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[3]</td>
<td>= Word 4</td>
<td>Received msg lost flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[4]</td>
<td>= Word 5</td>
<td>Bus-off condition flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[7]</td>
<td>= Word 8</td>
<td>Form error flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[8]</td>
<td>= Word 9</td>
<td>Bit error flag</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[10]</td>
<td>= Word 11</td>
<td>CRC error</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[12]</td>
<td>= Word 13</td>
<td>ACK error</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
<tr>
<td>[14]</td>
<td>= Word 15</td>
<td>Error passive state</td>
<td></td>
<td></td>
<td></td>
<td>9350</td>
</tr>
</tbody>
</table>

Description:
Displays the CAN diagnostic information for the parallel interface.

Description:
Displays the data selected for transmission.

Description:
Displays the CAN diagnostic information for the parallel interface.

2 Parameters

2.2 List of parameters

### p51814[0...15] CI: Parallel interface master transmit data / PI master tr data

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the signal sources for transmit data when operating the device as a master on the parallel interface.</td>
<td>[0] = Word 1</td>
<td>This parameter is used to define the transmit data and its position in the transmit telegram.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[1] = Word 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[10] = Word 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>[14] = Word 15</td>
<td></td>
</tr>
</tbody>
</table>

### p51815 Parallel interface number of devices / Par_IF device qty

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sets the number of CUDs, which communicate with one another via the parallel switching interface.</td>
<td>1</td>
<td>- If the number set here is less than the actual number of devices connected to the parallel switching interface, then failure of some of the devices is ignored.</td>
</tr>
<tr>
<td></td>
<td>This setting is intended so that every device connected to the parallel switching interface can monitor whether all devices are active and/or available.</td>
<td>16</td>
<td>- A setting of 1 means that the monitoring is inactive.</td>
</tr>
<tr>
<td></td>
<td>Each of the devices connected to the parallel switching interface continually monitors whether all of the devices regularly send telegrams.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;Device connected to the parallel switching interface&quot; is every CUD, at which p51800 &gt; 0.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&quot;Regularly sending telegrams&quot; means that the time between two send telegrams from the same device must be less than 100 ms.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**p51819[0...1]**  
**External voltage transformer transformation ratio / V transf ext ratio**

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

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Func. diagram:** 6950, 6965  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0.000100</td>
<td>1.000000</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the ratio between output and input voltage on the external voltage transformer for line and armature voltage.

**Index:**  
[0] = Line voltage  
[1] = Armature voltage

**Note:**  
The parameter is only effective on the Control Module.

**Example:**  
Output voltage = 100 V  
Input voltage = 2000 V

--> p51819 = 100 V / 2000 V = 0.050

---

**p51820**  
**Armature rated supply voltage / Arm V_rated**

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

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Func. diagram:** 6965  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>50 [Vrms]</td>
<td>5000 [Vrms]</td>
<td>1000 [Vrms]</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the rated supply voltage (rms value) for which the power unit is suitable (electric strength of the thyristors).

**Note:**  
The parameter is only effective on the Control Module.

The set supply voltage is displayed in r50071.  
Parameter p50078[0] (armature rated input voltage) is limited to this value.

---

**p51821[0...1]**  
**Measurement cable connection / Meas cab conn**

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

**Data type:** Integer16  
**Dyn. index:** -  
**Func. diagram:** 6965  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

**Description:**  
Sets the connections used to measure the line voltage and the armature voltage on the A7117 module.

**Value:**  
0: No selection  
6: XU6 / XV6 / XW6 or XC6 / XD6  
50: XU5 / XV5 / XW5 or XC5 / XD5  
125: XU4 / XV4 / XW4 or XC4 / XD4  
250: XU3 / XV3 / XW3 or XC3 / XD3  
575: XU2 / XV2 / XW2 or XC2 / XD2  
1000: XU1 / XV1 / XW1 or XC1 / XD1

**Index:**  
[0] = Line voltage  
[1] = Armature voltage

**Note:**  
The parameter is only effective on the Control Module.  
The parameter value indicates the rated rms value of the maximum measurable line voltage.
### 2 Parameters

#### 2.2 List of parameters

**p51822**  
**Armature rated direct current / Arm I\(_{\text{rated}}\)**  
**DC_CTRL**  
- **Can be changed**: T  
- **Data type**: FloatingPoint32  
- **P-Group**: -  
- **Not for motor type**: -  
- **Min**: 0.1 [A]  
- **Max**: 20000.0 [A]  

**Description**: Sets the rated direct current for the armature. The output direct current supported by the power unit in continuous operation should be set in this parameter.  
**Note**: The parameter is only effective on the Control Module.

**p51823**  
**Load voltage at armature rated current / V\(_{\text{load}}\) I\(_{\text{a\_rated}}\)**  
**DC_CTRL**  
- **Can be changed**: T  
- **Data type**: FloatingPoint32  
- **P-Group**: -  
- **Not for motor type**: -  
- **Min**: 0.1000 [V]  
- **Max**: 1.2000 [V]  

**Description**: Sets the load voltage resulting from the following calculation formula:  
\[ V_{\text{load}} = R_{\text{load}} \cdot r \cdot I_{\text{d}} \]  
- **r**: Transformation ratio of the current transformer (I\(_2\) / I\(_1\))  
- **R\(_{\text{load}}\)**: The load resistance (default 10 ohm)  
- **I\(_{\text{d}}\)**: Output direct current according to parameter p51822  
**Note**: The parameter is only effective on the Control Module.

**p51824**  
**Current transformer configuration / I\(_{\text{transf config}}\)**  
**DC_CTRL**  
- **Can be changed**: T  
- **Data type**: Integer16  
- **P-Group**: -  
- **Not for motor type**: -  
- **Min**: 1  
- **Max**: 5  
- **Expert list**: 1  

**Description**: Sets the configuration for the current transformer for current actual value sensing.  
**Value**:  
1: Current transformer in phase U and V  
2: Current transformer in phase U and W  
3: Current transformer in phase V and W  
4: External current transformer connected in V circuit  
5: Bipolar current actual value signal (external shunt)  
**Note**: The parameter is only effective on the Control Module.

**p51825**  
**Power unit type / PU typ**  
**DC_CTRL**  
- **Can be changed**: T  
- **Data type**: Integer16  
- **P-Group**: -  
- **Not for motor type**: -  
- **Min**: 2  
- **Max**: 4  

**Description**: Sets the power unit type.  
**Value**:  
2: 2-quadrant power unit  
4: 4-quadrant power unit  
**Note**: The parameter is only effective on the Control Module.
2 Parameters

2.2 List of parameters

### p51826[0...2]
**Armature current converter firing pulse chopping times / Pulse chop t**

<table>
<thead>
<tr>
<th>DC_CTRL</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>Dyn. index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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 [µs]</td>
<td>Max</td>
<td>105 [µs]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the times for firing pulse chopping on the armature current converter.

**Index:**
- [0] = Length of first pulse
- [1] = Length additional pulses
- [2] = Break length

**Note:** The parameter is only effective on the Control Module.

Block pulses are generated (i.e. firing pulses without pulse chopping) with the following setting:
- \( p51826[0] = 105 \) µs
- \( p51826[1] = 105 \) µs
- \( p51826[1] = 0 \) µs

### p51829[0...2]
**Heat sink temperature threshold / Htsk temp thresh**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>U, T</th>
<th>Calculated:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>0.0 [°C]</td>
<td>Max</td>
<td>200.0 [°C]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the threshold for temperature monitoring on the Control Module.

**Index:**
- [0] = Temperature sensor 1 / XT5 / A7109
- [1] = Temperature sensor 2 / XT6 / A7109

**Dependency:**
- Refer to: p51830
- Refer to: F60067

**Note:** The parameter is only effective on the Control Module.

### p51830[0...2]
**Heat sink temperature sensor type / Htsk temp type**

<table>
<thead>
<tr>
<th>DC_CTRL</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>Dyn. index:</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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</td>
<td>Max</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the sensor type for the temperature sensors on the Control Module.

**Value:**
- 0: No temperature sensor present
- 1: NTC with 6.8 kOhm
- 2: NTC with 10 kOhm

**Index:**
- [0] = Temperature sensor 1 / XT5 / A7109
- [1] = Temperature sensor 2 / XT6 / A7109

**Dependency:**
- Refer to: p51829
- Refer to: F60067

**Note:** The NTC temperature sensor should be connected at module A7109 or A7116 at terminal XT5, XT6 or XT7. The parameter is only effective on the Control Module.
### 2.2 List of parameters

#### p51831[0...4]
**Fuse monitoring activation / Fuse mon act**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6957, 6965</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 1</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Setting to activate/de-activate fuse monitoring on the Control Module.

**Value:**
- 0: Deactivated
- 1: Activated

**Index:**
- [0] = Connector X23B
- [1] = Connector X23C
- [2] = Connector X23D
- [3] = Connector X23E
- [4] = Connector X23F

**Dependency:**
- Refer to: F60004, F60204

**Note:**
- The parameter is only effective on the Control Module.
- Connector X23B is available on the power interface and on the expansion module (A7112 module). Monitoring at connectors X23C to X23F is only possible using the expansion module.
- Only groups of up to 6 inputs can be activated and de-activated at the same time.
- If an expansion module is connected to slot X23A, slot X23B cannot be used on the power interface.

#### p51832
**Fan monitoring configuration / Fan mon config**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8049</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the configuration for fan monitoring on the Control Module.

**Value:**
- 0: OFF
- 1: ON and Low active
- 2: ON and High active

**Dependency:**
- Refer to: r53140
- Refer to: A60266, F60267

**Note:**
- Fan monitoring is wired via input terminal 122/123.
- The parameter can only be changed for the Control Module.

#### p51833
**External fault mode / Ext F mode**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: T</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6965, 8049</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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 Max</td>
<td>Factory setting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Sets the mode to trigger the external fault F60203 via input terminal 124/125 on the Control Module.

**Value:**
- 0: Switched off
- 1: Switched on and Low level triggers fault
- 2: Switched on and High level triggers fault

**Dependency:**
- Refer to: r53140
- Refer to: F60203
Note: The parameter can only be changed for the Control Module.
If value = 1:
The input signal is available via binector output r53140.4 for further interconnection.
If value = 2:
The input signal is available via binector output r53140.3 for further interconnection.

### p51834

**BI: Signal source for device fan relay output / Fan relay sig s**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>∈ T</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Unsigned32 / Binary  
**P-Group:** -  
**Not for motor type:** -  
**Min:** -  
**Max:** -  

**Description:**
Sets the signal source for the "Fan On" relay output (terminal 120/121) on the power interface.

**Note:**
The parameter can only be changed for the Control Module.

### p51835[0...2]

**Delay times for device fan monitoring / Fan mon t_del**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>∈ T</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min:** 0.0 [s]  
**Max:** 60.0 [s]  

**Index:**
[0] = ON delay monitoring  
[1] = ON delay fault  
[2] = ON delay alarm

**Dependency:**
Refer to: A60266, F60267

**Description:**
Sets the delay times for device fan monitoring on the Control Module.

**Note:**
The parameter can only be changed for the Control Module.

### p51838

**Field device external rated direct current / I_rated ext**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>∈ T</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** FloatingPoint32  
**P-Group:** -  
**Not for motor type:** -  
**Min:** 0.00 [A]  
**Max:** 600.00 [A]  

**Dependency:**
Refer to: p50082

**Description:**
Sets the rated direct current of an external field device (if there is one).

**Note:**
This parameter is only effective if p50082 >= 21.

### p51839

**External field monitoring / Ext field monit**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>∈ U, T</td>
<td></td>
<td>-</td>
<td>2</td>
</tr>
</tbody>
</table>

**Data type:** Integer16  
**P-Group:** -  
**Not for motor type:** -  
**Min:** 0  
**Max:** 1  

**Description:**
Setting for activating/de-activating the monitoring for the external field.

**Value:**
0: Deactivated  
1: Activated
2 Parameters

2.2 List of parameters

Dependency: Refer to: p50082

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51840</td>
<td>Auto-reversing stage simulation mode / Auto-rev simul</td>
<td></td>
<td>Setting to control simulation mode in the auto-reversing stage.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td></td>
<td></td>
<td>The simulation mode can only be activated in operating states ( \geq 07.0 ).</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6865</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit 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>26</td>
<td>0</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51845</td>
<td>Line zero crossings offset angle fixed / Line offset fixed</td>
<td></td>
<td>Sets a fixed offset angle between the line zero crossings at the power unit and the synchronizing voltage.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td></td>
<td></td>
<td>Refer to: p51846, p51847</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6950</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit 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>-120.00 [°]</td>
<td>120.00 [°]</td>
<td>0.00 [°]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Value</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51846[0...5]</td>
<td>Line zero crossings offset angle thyristor pair-dependent factor / Line offset Fact</td>
<td></td>
<td>Sets an offset angle dependent on a thyristor pair between the line zero crossings at the power unit and the synchronizing voltage.</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td></td>
<td></td>
<td>Refer to: p51845, p51847</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Calculated: -</td>
<td>Access level: 3</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6950</td>
<td></td>
</tr>
<tr>
<td>Not for motor type: -</td>
<td>Unit 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>-10.00 [°]</td>
<td>10.00 [°]</td>
<td>0.00 [°]</td>
<td></td>
</tr>
</tbody>
</table>

Index: | |
2 Parameters

2.2 List of parameters

**p51847[0...5]**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>CL: Line zero crossings offset angle thyristor pair-dependent s_src / Line offset s_src</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Unsigned32 / FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td>0...5</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the signal source for the offset angle dependent on a thyristor pair between the line zero crossings at the power unit and the synchronizing voltage.

**Index:**

- [0] = Thyristor pair 1-6 (UV+)
- [1] = Thyristor pair 1-2 (WU-)
- [2] = Thyristor pair 2-3 (VW+)
- [3] = Thyristor pair 3-4 (UV-)
- [4] = Thyristor pair 4-5 (WU+)
- [5] = Thyristor pair 5-6 (VW-)

**Dependency:**
Refer to: p51845, p51846

**p51852**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Current actual value sensing analog input configuration / I_sens AI config</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: Integer16</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>

**Description:**
Sets the configuration for the armature current actual value sensing.

**Value:**

- Value = 0: Ia sensing internal
- Value > 0: An external armature current actual value sensing is fed to the SINAMICS DC MASTER via an analog input. The device-internal armature current actual value sensing is not active.

**Dependency:**
Refer to: p51823, p51824

**Danger:**
For value > 0, the following applies:

Incorrect setting of parameter p51853 leads to damaging or destruction of the power unit!

**Note:**
For value > 0, the following applies:
This is to be used only in certain special cases, where the accuracy of the device-internal armature current actual value sensing is regarded as insufficient.

The following applies for the Control Module:
p51852 = 0: p51824 is active
p51852 > 0: p51824 is not active

**p51853**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Current actual value sensing analog input voltage at rated Ia / I_sen AI V at Ia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can be changed: T</td>
<td>Calculated: -</td>
</tr>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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>
<tr>
<td>0.100 [V]</td>
<td>10.000 [V]</td>
</tr>
<tr>
<td>5.000 [V]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**
Sets the voltage for the external current actual value sensing.

This voltage is supplied via the input terminal X177:x/x at armature rated current.
2 Parameters

2.2 List of parameters

Dependency: Refer to: p51823, p51824

Danger: The following applies for p51852 > 0:

Incorrect setting of parameter p51853 leads to damaging or destruction of the power unit!

Note: The following applies for the DC converter:
p51852 = 0: p51853 is not active
p51852 > 0: p51853 is active

The following applies for the Control Module:
p51852 = 0: p51823 is active
p51852 > 0: p51853 is active, p51823 is not active

<table>
<thead>
<tr>
<th>p51854</th>
<th>Armature voltage sensing configuration / Va_sens config</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type:</td>
<td>Integer16</td>
</tr>
<tr>
<td>P-Group:</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>2</td>
</tr>
<tr>
<td>Value</td>
<td>0: Va sensing internal</td>
</tr>
<tr>
<td></td>
<td>1: Va sensing via AI 2 (X177.29/30)</td>
</tr>
<tr>
<td></td>
<td>2: Va sensing internal &amp; via AI 2 (X177.29/30)</td>
</tr>
<tr>
<td>Description:</td>
<td>Sets the configuration for the armature voltage sensing.</td>
</tr>
<tr>
<td>Value:</td>
<td>Value = 0: The device-internal armature voltage sensing is effective.</td>
</tr>
<tr>
<td></td>
<td>Value = 1: An external armature voltage sensing is entered via analog input 2 (X177.29/30). The device-internal armature voltage sensing is not effective.</td>
</tr>
<tr>
<td></td>
<td>Value = 2: both</td>
</tr>
<tr>
<td>Value:</td>
<td>0: Va sensing internal</td>
</tr>
<tr>
<td></td>
<td>1: Va sensing via AI 2 (X177.29/30)</td>
</tr>
<tr>
<td></td>
<td>2: Va sensing internal &amp; via AI 2 (X177.29/30)</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Refer to: p51823, p51824</td>
</tr>
<tr>
<td>Notice:</td>
<td>The device must be restarted. Only then does the armature voltage sensing operate correctly via analog input 2.</td>
</tr>
<tr>
<td>Note:</td>
<td>AI: Analog Input</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51855</th>
<th>Armature voltage sensing analog input reference voltage / Va_sens AI V_ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>10.000 [V]</td>
</tr>
<tr>
<td>Max</td>
<td>2000.000 [V]</td>
</tr>
<tr>
<td>Value:</td>
<td>10.000 [V]</td>
</tr>
<tr>
<td>Dependency:</td>
<td>Sets the armature voltage, which corresponds to a +10 V voltage at analog input 2 (X177.29/30).</td>
</tr>
<tr>
<td>Notice:</td>
<td>The parameter is only effective for p51854 = 1.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>p51861[0...n]</th>
<th>Capacitance of the DC link capacitor / Capac_DClink</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: U, T</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>0.000 [µF]</td>
</tr>
<tr>
<td>Max</td>
<td>100000000.000 [µF]</td>
</tr>
<tr>
<td>Value:</td>
<td>0.000 [µF]</td>
</tr>
<tr>
<td>Dependency:</td>
<td>The parameter only effective for p51854 = 1.</td>
</tr>
<tr>
<td>Note:</td>
<td>The parameter is only effective for p51854 = 1.</td>
</tr>
</tbody>
</table>

Description: Load connection: capacitance of the DC link capacitor
### 2 Parameters
2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>p51862</td>
<td>CI: Capacitance of the DC link capacitor signal source / C_DC link s_src</td>
</tr>
<tr>
<td></td>
<td>Load connection: signal source for varying the capacitance of the DC link capacitor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52000</td>
<td>CO: Fixed value 0 % / Fix val 0%</td>
</tr>
<tr>
<td></td>
<td>Connector output with constant fixed value 0 %.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52001</td>
<td>CO: Fixed value 100 % / Fix val 100%</td>
</tr>
<tr>
<td></td>
<td>Connector output with constant fixed value 100 %.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52002</td>
<td>CO: Fixed value 200 % / Fix val 200%</td>
</tr>
<tr>
<td></td>
<td>Connector output with constant fixed value 200 %.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52003</td>
<td>CO: Fixed value -100 % / Fix val -100%</td>
</tr>
<tr>
<td></td>
<td>Connector output with constant fixed value -100 %.</td>
</tr>
</tbody>
</table>
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>List number</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Not for motor type</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Expert list</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52004</td>
<td>CO: Fixed value -200 % / Fix val -200%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- %</td>
<td>- %</td>
<td>-</td>
<td>PERCENT</td>
</tr>
<tr>
<td>r52005</td>
<td>CO: Fixed value 50 % / Fix val 50%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- %</td>
<td>- %</td>
<td>-</td>
<td>PERCENT</td>
</tr>
<tr>
<td>r52006</td>
<td>CO: Fixed value 150 % / Fix val 150%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- %</td>
<td>- %</td>
<td>-</td>
<td>PERCENT</td>
</tr>
<tr>
<td>r52007</td>
<td>CO: Fixed value -50 % / Fix val -50%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- %</td>
<td>- %</td>
<td>-</td>
<td>PERCENT</td>
</tr>
<tr>
<td>r52008</td>
<td>CO: Fixed value -150 % / Fix val -150%</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>- %</td>
<td>- %</td>
<td>-</td>
<td>PERCENT</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>r52010</th>
<th>CO: CUD analog input main setpoint raw value / CUD AI m set raw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 2075</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: PERCENT 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 raw value at the "Main setpoint" analog input (X177.25/26).

<table>
<thead>
<tr>
<th>r52011</th>
<th>CO: CUD analog input main setpoint / CUD AI m set</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: - Calculated: - Access level: 1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 2075</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: PERCENT 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 "Main setpoint" analog input (X177.25/26).

<table>
<thead>
<tr>
<th>r52012</th>
<th>CO: CUD analog input main actual value raw value / CUD AI m act raw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 2075</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: PERCENT 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 raw value at the "Main actual value" analog input (XT1.103/104).

<table>
<thead>
<tr>
<th>r52013</th>
<th>CO: CUD analog input main actual value / CUD AI m act</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 2075, 6810</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: PERCENT 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 "Main actual value" analog input (XT1.103/104).

<table>
<thead>
<tr>
<th>r52014</th>
<th>CO: CUD analog input select input 1 raw value / CUD AI sel 1 raw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td>Can be changed: - Calculated: - Access level: 2</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32 Dyn. index: - Func. diagram: 2080</td>
</tr>
<tr>
<td>P-Group:</td>
<td>- Unit group: - Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>- Scaling: PERCENT 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 raw value at the analog "Select input 1" (X177.27/28).
### 2 Parameters
#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52015</td>
<td><strong>CO: CUD analog input select input 1 / CUD AI sel 1</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</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></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the analog &quot;Select input 1&quot; (X177.27/28).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52016</td>
<td><strong>CO: CUD analog input select input 2 raw value / CUD AI sel 2 raw</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</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></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
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<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the raw value at the analog &quot;Select input 2&quot; (X177.29/30).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52017</td>
<td><strong>CO: CUD analog input select input 2 / CUD AI sel 2</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</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></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the analog &quot;Select input 2&quot; (X177.29/30).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52018</td>
<td><strong>CO: CUD analog input 3 raw value / CUD AI 3 raw</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</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></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the raw value at analog input 3 (X177.1/2) on the CUD.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52019</td>
<td><strong>CO: CUD analog input 3 result / CUD AI 3 res</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
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<td>Data type:</td>
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</tr>
<tr>
<td>P-Group:</td>
<td>Access level: 2</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td></td>
</tr>
<tr>
<td>Min</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Max</td>
<td></td>
</tr>
<tr>
<td>- [%]</td>
<td></td>
</tr>
<tr>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the conversion result at analog input 3 (X177.1/2) on the CUD.</td>
</tr>
</tbody>
</table>
2 Parameters
2.2 List of parameters

r52020  CO: CUD analog input 4 raw value / CUD AI 4 raw
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 2085
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the raw value at analog input 4 (X177.3/4) on the CUD.
Dependency: Refer to: r52021

r52021  CO: CUD analog input 4 result / CUD AI 4 res
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 2085
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the conversion result at analog input 4 (X177.3/4) on the CUD.
Dependency: Refer to: r52023

r52022  CO: CUD analog input 5 raw value / CUD AI 5 raw
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 2090
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the raw value at analog input 5 (X177.5/6) on the CUD.
Dependency: Refer to: r52023

r52023  CO: CUD analog input 5 result / CUD AI 5 res
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 2090
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the conversion result at analog input 5 (X177.5/6) on the CUD.
Dependency: Refer to: r52023

r52024  CO: CUD analog input 6 raw value / CUD AI 6 raw
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 2090
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the raw value at analog input 6 (X177.7/8) on the CUD.
Dependency: Refer to: r52025
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Data type</th>
<th>Access level</th>
<th>Dyn. index</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Factory setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52025</td>
<td><strong>CO: CUD analog input 6 result / CUD AI 6 res</strong></td>
<td>FloatingPoint32</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for the conversion result at analog input 6 (X177.7/8) on the CUD.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52026</td>
<td><strong>CO: CUD analog output 0 value after smoothing / CUD AO 0 v aft sm</strong></td>
<td>FloatingPoint32</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td></td>
<td>Description: Display and connector output for analog output 0 (X177.49/50) on the CUD.</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>r52027</td>
<td><strong>CO: CUD analog output 1 value after smoothing / CUD AO 1 v aft sm</strong></td>
<td>FloatingPoint32</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for analog output 1 (X177.51/52) on the CUD.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52047</td>
<td><strong>CO: Ramp-function generator braking distance (Unsigned32) / RFG brake dist U32</strong></td>
<td>Unsigned32</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for the braking distance required as increments of the pulse encoder defined in p0400. The pulse encoder to be used must be selected using p50331. The required braking distance is calculated assuming that the speed setpoint at the ramp-function generator input has been set to 0 and the speed actual value is approaching 0, taking the set ramp-down time and roundings into consideration.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: For p0400[p50331] = 0, a braking distance of 0 is displayed. The braking distance calculation is only correct if the ramp-down time and the roundings do not change during braking (p50302, r00899.5, p50637, p50638).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

**r52048**  
**CO: Ramp-function generator braking distance (FloatingPoint32) / RFG br dist float**

<table>
<thead>
<tr>
<th>DC_CTRL</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>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>3152</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Display and connector output for the braking distance required as increments of the pulse encoder defined in p0400. The pulse encoder to be used must be selected using p50331. The required braking distance is calculated assuming that the speed setpoint at the ramp-function generator input has been set to 0 and the speed actual value is approaching 0, taking the set ramp-down time and roundings into consideration.

**Note:**  
For p0400[p50331] = 0, a braking distance of 0 is displayed. The braking distance calculation is only correct if the ramp-down time and the roundings do not change during braking (p50302, r00899.5, p50637, p50638).

**r52049**  
**Temperature sensor available / Temp_sens avail**

<table>
<thead>
<tr>
<th>DC_CTRL</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>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>6960</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Displays the integrated temperature sensors.

**Note:**  
The display is independent of the temperature sensor status and only indicates the desired state.

**r52050[0...4]**  
**CO: Temperature sensor display / Temp sensor disp**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
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<td></td>
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<td>1</td>
</tr>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>8047, 8048</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Display and connector output for the device's temperature outputs.

**Index:**  
[0] = Temperature 1  
[1] = Temperature 2  
[4] = CUD Control Unit temperature

**Note:**  
Temperature sensors which are not in use return a high negative value (approx. -200 °C).

**r52051**  
**CO: Motor temperature output / Mot temp outp**

<table>
<thead>
<tr>
<th>DC_CTRL</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>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram:</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>8030</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:**  
Display and connector output for the motor temperature.

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List Manual (LH8), 02/2015, 6RX1800-0ED76 565
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Data Type</th>
<th>Access Level</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Min</th>
<th>Max</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52100</td>
<td>CO: Armature firing angle after limiting / Fir ang aft lim</td>
<td>FloatingPoint32</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r52101</td>
<td>CO: Armature firing angle before limiting / Fir ang bef lim</td>
<td>FloatingPoint32</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r52102</td>
<td>CO: Cl-loop arm curr ctrl prectr valu e + arm curr controller output / Ia ctr prec+outp</td>
<td>FloatingPoint32</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>r52103</td>
<td>CO: Armature current flow duration / Arm I_flow dur</td>
<td>FloatingPoint32</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Scaling:**
- 0 % corresponds to 0 °C
- 100 % corresponds to 100 °C

**Dependency:**
The parameter is only valid for the following temperature sensors with a continuous characteristic:
- KTY84 (p50490 = 1)
- PT100 (p50490 = 6)
- NTC thermistor K227 (p50490 = 7)
- PT1000 (p50490 = 8)

**Note:**
If p50490 = 0, 2 to 5, a value of 0 is displayed.
### 2 Parameters

#### 2.2 List of parameters

**r52104**  
**CO: Armature current increase / Arm I_incr**

**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min**  
- **Max**  
- **Factory setting**  

**Description:**  
Display and connector output for the current increase in the armature (dIa/dt) in A/s.

**Note:**
- Value = 0: No torque direction requested  
- Value = 1: Torque direction 1 requested  
- Value = 2: Torque direction 2 requested

**r52106**  
**Torque direction requested / Tqe dir requ**

**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** Integer16  
- **Dyn. index:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** -  
- **Expert list:** 1  
- **Min**  
- **Max**  
- **Factory setting**  

**Description:**  
Displays the requested torque direction.

**Note:**
- Value = 0: No torque direction requested  
- Value = 1: Torque direction 1 requested  
- Value = 2: Torque direction 2 requested

**r52107**  
**CO: Arm curr act val averaged over 6 cycles with reference to motor / Ia act 6 mot cyc**

**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min**  
- **Max**  
- **Factory setting**  

**Description:**  
Display and connector output of the signed armature current actual value.  
The value is averaged over 6 firing cycles and referenced to the rated motor current.

**r52108[0...2]**  
**CO: Phase currents rms value / I_phase rms**

**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min**  
- **Max**  
- **Factory setting**  

**Description:**  
Display and connector output for the rms values of the phase currents.  
The values are averaged over six firing cycles.  
100 % corresponds to sqrt(2/3) * r50072[1] = 0.8165 * r50072[1]  
The reference value is that rms value of the phase currents that is obtained if the rated DC current flows in the B6 bridge.

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

2.2 List of parameters

r52109 CO: Armature current actual value averaged over 6 cycles / Ia act 6 cyc

Description:
Display and connector output of the signed armature current actual value. The value is averaged over 6 firing cycles.

Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6851, 6902, 8038, 8042, 8046
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]

r52110 CO: Cl-loop arm curr control curr controller output / Ia ctr outp

Description:
Display and connector output for the closed-loop armature current control output.

Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6855
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]

r52111 CO: Cl-loop arm curr control curr controller outp proportional comp / Ia ctr outp P comp

Description:
Display and connector output for the proportional component of closed-loop armature current control.

Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6855
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]

r52112 CO: Cl-loop arm curr control curr controller outp integral comp / Ia ctr outp I comp

Description:
Display and connector output for the integral component of closed-loop armature current control.

Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6855
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]

r52113 CO: Cl-loop arm curr control curr setpoint/actual value difference / Ia ctr set/act

Description:
Display and connector output for the setpoint/actual value difference of closed-loop armature current control.

Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6855
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
2 Parameters

2.2 List of parameters

**r52114**

CO: Armature current actual value averaged over 1 cycle / Ia act 1 cyc

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
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<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dy. index: -</td>
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<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output of the signed armature current actual value. The value is averaged over 1 firing cycle.

**r52115**

CO: Cl-loop arm curr control curr controller actual value abs value / Ia ctr I_act abs

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dy. index: -</td>
<td>Func. diagram: 6855</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the absolute value of the current controller actual value for closed-loop armature current control.

**r52116**

CO: Armature current actual value internal absolute value / A I_act int abs

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dy. index: -</td>
<td>Func. diagram: 6851</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the absolute value of the internal armature current actual value. The value is averaged over one firing cycle.

**r52117**

CO: Armature current actual value internal signed / A I_act int sign

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dy. index: -</td>
<td>Func. diagram: 6851</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the signed internal armature current actual value. The value is averaged between the centers of the firing intervals.

**r52118**

CO: Cl-loop arm curr control curr controller setpoint absolute value / la ctr I_set abs

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type: FloatingPoint32</td>
<td>Dy. index: -</td>
<td>Func. diagram: 6855</td>
<td></td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the absolute value of the current controller setpoint for closed-loop armature current control.

**Dependency:** Refer to: r50020
## Parameters

### 2.2 List of parameters

#### r52119
**CO: Cl-loop arm curr control curr controller setpoint / Ia ctr I_set**

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
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</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 2</td>
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<tr>
<td></td>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Min:</strong> - [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Scaling:</strong> PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the current controller setpoint prior to absolute value generation for closed-loop armature current control.

#### r52120
**CO: Curr limitation arm curr setpoint before red gearbox stressing / Ia_set bef gear**

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
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</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td><strong>Data type:</strong> FloatingPoint32</td>
</tr>
<tr>
<td></td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Min:</strong> - [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Scaling:</strong> PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the current controller setpoint before reduced gearbox stressing.

#### r52121
**CO: Closed-loop armature current control pre-control output / Ia ctr prec outp**

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
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</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 1</td>
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<tr>
<td></td>
<td><strong>Data type:</strong> FloatingPoint32</td>
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<tr>
<td></td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Min:</strong> - [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Scaling:</strong> PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the current controller setpoint prior to absolute value generation for closed-loop armature current control.

#### r52122
**CO: EMF actual value armature current pre-control / EMF act prec**

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Access level:</strong> 2</td>
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<tr>
<td></td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Min:</strong> - [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Scaling:</strong> PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the current controller setpoint prior to absolute value generation for closed-loop armature current control.

**Note:**
100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.

#### r52123
**CO: EMF actual value signed / EMF act sign**

<table>
<thead>
<tr>
<th>Position</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
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<tr>
<td></td>
<td><strong>Access level:</strong> 2</td>
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<tr>
<td></td>
<td><strong>Data type:</strong> FloatingPoint32</td>
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<tr>
<td></td>
<td><strong>Unit group:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Not for motor type:</strong> -</td>
</tr>
<tr>
<td></td>
<td><strong>Min:</strong> - [%]</td>
</tr>
<tr>
<td></td>
<td><strong>Scaling:</strong> PERCENT</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the armature current pre-control output.

**Note:**
100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>P-Group</th>
<th>Unit 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>r52124</td>
<td>CO: Active power for a pure ohmic load / P_act ohm load</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Func. diagram: 6902</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: This quantity is used for heating applications (rms value current control or rms value power control).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52125</td>
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<td>1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 1</td>
<td>Func. diagram: 6845</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for the current controller setpoint after reduced gearbox stressing.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52126</td>
<td>CO: Armature current actual value rms value / Ia_act rms</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Func. diagram: 6851</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for the rms value of the internal armature current actual value. The value is averaged over 6 firing cycles, and referred to the rated device current (r50072[1]).</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52127</td>
<td>CO: Armature voltage rms value / Ua_act rms</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Func. diagram: 6902</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Description: Display and connector output for the rms value of the armature voltage. The value is averaged over six firing cycles. 100 % corresponds to (3 * sqrt(2)) / Pi * p50078[0] = 1.35 * p50078[0] = U_di0_rated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52128</td>
<td>CO: Firing angle linearized / Firing angle lin</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
<td>Func. diagram: 6858</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dependency: Displays the linearized firing angle.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
## Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Data Type</th>
<th>Dynamic Index</th>
<th>Function Diagram</th>
<th>P-Group</th>
<th>Unit Group</th>
<th>Unit Selection</th>
<th>Access Level</th>
<th>Not for Motor Type</th>
<th>Factory Setting</th>
<th>Expert List</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Factory Setting</th>
<th>Factory Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52129</td>
<td>CO: n-dependent current limitation armature current setpoint limit / I_lim _la _set _lim</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>DC_CTRL</td>
<td>CO</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td>r52130</td>
<td>CO: I2t monitoring armature current setpoint after limitation / I2t _la _set _n _lim</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>-</td>
<td>DC_CTRL</td>
<td>CO</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td>r52131</td>
<td>CO: Current limitation minimum positive armature current limit / Ia _lim _pos _min</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6840, 6845</td>
<td>DC_CTRL</td>
<td>CO</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td>r52132</td>
<td>CO: Current limitation maximum negative armature current limit / Ia _lim _neg _max</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6840, 6845</td>
<td>DC_CTRL</td>
<td>CO</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
<tr>
<td>r52133</td>
<td>CO: Current limitation setpoint before limitation (with add_s) / Set bef lim w add</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>8042</td>
<td>DC_CTRL</td>
<td>CO</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Note:**
- This parameter is calculated when Ua\_set is fed into the gating unit.
- -100 % corresponds to 180 degrees
- +100% corresponds to 0 degrees

**Dependency:**
- Refer to: p50109

**Description:**
- Display and connector output for the armature current setpoint after speed-dependent current limitation.
- Display and connector output for the armature current setpoint after limitation by means of I2t monitoring as a percentage of r50072[1].
- Display and connector output for the minimum positive armature current limit.
- Display and connector output for the maximum negative armature current limit.
- Display and connector output for the armature current controller setpoint before limitation (with additional setpoint).
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52134</td>
<td>CO: Speed limiting controller curr controller setp before limitation / Ia set bef lim</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<td></td>
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<td>Dyn. index: -</td>
<td>Func. diagram: 6835</td>
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<tr>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the current controller setpoint before current limitation.

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52135[0...6]</td>
<td>CO: Current limitation default for torque direction II / Ia lim def t d II</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6840</td>
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</tr>
<tr>
<td></td>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the variable torque limiting defaults in torque direction II.

**Dependency:** Refer to: p50603, p50604

**Note:** Connector output r52135[0 to 6] is the inverse of p50603[0 to 6] and interconnected by default via connector input p50604[0 to 6].

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52136</td>
<td>CO: Speed limiting controller upper torque limit effective / n lim t lim up max</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6835</td>
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</tr>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
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<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:** Display and connector output for the effective upper torque limit (maximum value) on the speed limiting controller.

**Dependency:** Refer to: r52137

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52137</td>
<td>CO: Speed limiting controller lower torque limit effective / n lim t lim l min</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<td>Data type: FloatingPoint32</td>
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<td>Func. diagram: 6835</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the effective lower torque limit (minimum value) on the speed limiting controller.

**Dependency:** Refer to: r52136

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
<th>Can be changed</th>
<th>Calculated</th>
<th>Access level</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52138[0...4]</td>
<td>CO: Torque limiting negative default / Tqe lim neg def</td>
<td>DC_CTRL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
<td>Access level: 2</td>
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<tr>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6825</td>
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<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
<td></td>
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<tr>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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</tr>
</tbody>
</table>

**Description:** Display and connector output for the defaults for variable negative torque limiting.

**Dependency:** Refer to: p50606

**Note:** Connector output r52138[0 to 4] is the inverse of p50605[0 to 4]; it is interconnected by default via connector input p50606[0 to 4].
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>r52140</td>
<td><strong>CO: Torque limiting torque setpoint / Tqe lim set</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min [-%]&lt;br&gt;Max [-%]&lt;br&gt;Access level: 2&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: PERCENT&lt;br&gt;Factroy setting&lt;br&gt;Display and connector output for the torque setpoint.</td>
</tr>
<tr>
<td>r52141</td>
<td><strong>CO: Torque limiting torque setpoint after limiting / T lim set aft lim</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min [-%]&lt;br&gt;Max [-%]&lt;br&gt;Access level: 1&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: PERCENT&lt;br&gt;Factroy setting&lt;br&gt;Display and connector output for the torque setpoint after limiting.</td>
</tr>
<tr>
<td>r52142</td>
<td><strong>CO: Armature current actual value sensing torque actual value / A act val s tq act</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min [-%]&lt;br&gt;Max [-%]&lt;br&gt;Access level: 2&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: PERCENT&lt;br&gt;Factroy setting&lt;br&gt;Display and connector output for the torque actual value as a percentage of r50072[1] * p50102.</td>
</tr>
<tr>
<td>r52143</td>
<td><strong>CO: Torque limiting armature torque limit min pos / T lim arm min pos</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min [-%]&lt;br&gt;Max [-%]&lt;br&gt;Access level: 2&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: PERCENT&lt;br&gt;Factroy setting&lt;br&gt;Display and connector output for the minimum positive torque limit for the armature.</td>
</tr>
<tr>
<td>r52144</td>
<td><strong>CO: Torque limiting armature torque limit max neg / T lim arm max neg</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min [-%]&lt;br&gt;Max [-%]&lt;br&gt;Access level: 2&lt;br&gt;Expert list: 1&lt;br&gt;Unit selection: PERCENT&lt;br&gt;Factroy setting&lt;br&gt;Display and connector output for the maximum negative torque limit for the armature.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**r52145**

**CO: Torque limiting setpoint before limiting (with add_s) / Set bef lim w add**

**DC_CTRL**

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

**Data type:** FloatingPoint32
- Dyn. index: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min: - [%]
- Max: - [%]

**Description:** Display and connector output for the torque setpoint before limiting (with additional setpoint).

**r52147**

**CO: Torque limiting setpoint before limiting (without add_s) / Set bef lim w/o add**

**DC_CTRL**

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

**Data type:** FloatingPoint32
- Dyn. index: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min: - [%]
- Max: - [%]

**Description:** Display and connector output for the torque setpoint before limiting (without additional setpoint).

**r52148**

**CO: Speed controller torque setpoint / n_ctr tq set**

**DC_CTRL**

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

**Data type:** FloatingPoint32
- Dyn. index: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min: - [%]
- Max: - [%]

**Description:** Display and connector output for the speed controller's output value with friction and inertia compensation and additional torque setpoint.

**r52149**

**CO: Torque actual value in relation to p50100 * p50102 / Tqe act ref**

**DC_CTRL**

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

**Data type:** FloatingPoint32
- Dyn. index: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min: - [%]
- Max: - [%]

**Description:** Display and connector output for the torque actual value referenced to p50100 * p50102.

**r52150**

**CO: Speed controller setpoint change / n_ctr set chng**

**DC_CTRL**

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

**Data type:** FloatingPoint32
- Dyn. index: -
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min: - [%]
- Max: - [%]

**Description:** Display and connector output for the setpoint change on the speed controller.

**Dependency:** Refer to: p50540, r52174
2 Parameters

2.2 List of parameters

### r52152
**CO: Speed controller setpoint/actual value difference output / Set/act dif outp**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
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<td>Dyn. index:</td>
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</tr>
<tr>
<td>Func. diagram:</td>
<td>6820</td>
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<tr>
<td>P-Group:</td>
<td>-</td>
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<tr>
<td>Unit group:</td>
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</tr>
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<td>Unit selection:</td>
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<td>Not for motor type:</td>
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<td>Scaling:</td>
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<td>Expert list:</td>
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<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:**
Display and connector output for acceleration dependent upon setpoint/actual value difference.

In the case of the "Acceleration dependent upon setpoint/actual value difference" function, only the proportion of the speed controller's setpoint/actual value difference which has an absolute value in excess of the threshold (p50543) is switched through.

**Dependency:**
Refer to: p50541, p50543

### r52154
**CO: Speed controller reference model output / n_ctrl ref outp**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
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<tr>
<td>Func. diagram:</td>
<td>6812</td>
</tr>
<tr>
<td>P-Group:</td>
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<td>Unit selection:</td>
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<td>Not for motor type:</td>
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<td>Expert list:</td>
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<td>Min</td>
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<td>Max</td>
<td>- [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output for the reference model for the speed controller.

**Dependency:**
Refer to: p50237, p50238, p50239

### r52155
**CO: Speed controller reference model setpoint-actual value difference / n_ctr ref set-act**

<table>
<thead>
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<th>Value</th>
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<td>Data type:</td>
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<td>Dyn. index:</td>
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<tr>
<td>Func. diagram:</td>
<td>6812</td>
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<td>P-Group:</td>
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<td>Unit group:</td>
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<td>Unit selection:</td>
<td>-</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
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<tr>
<td>Expert list:</td>
<td>1</td>
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<td>Min</td>
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<td>- [%]</td>
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<tr>
<td>Factory setting</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:**
Display and connector output for the setpoint-actual value difference after the influence of the reference model for the speed controller.

**Dependency:**
Refer to: p50621, p50622, p50623, p50624

### r52156
**CO: Lead/lag element output value / Lead/lag output**

<table>
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<td>Dyn. index:</td>
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<tr>
<td>Func. diagram:</td>
<td>6810</td>
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<td>P-Group:</td>
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<td>Unit group:</td>
<td>-</td>
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<td>Unit selection:</td>
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</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
</tr>
<tr>
<td>Scaling:</td>
<td>PERCENT</td>
</tr>
<tr>
<td>Expert list:</td>
<td>1</td>
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<td>Min</td>
<td>- [%]</td>
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<td>- [%]</td>
</tr>
<tr>
<td>Factory setting</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:**
Display and connector output for the output value of the lead/lag element.

**Dependency:**
Refer to: p50207, p50208, p50209

### r52160
**CO: Speed controller output value / n_ctr outp val**

<table>
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<tbody>
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<td>DC_CTRL</td>
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<td>Dyn. index:</td>
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<td>Func. diagram:</td>
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<td>Unit group:</td>
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<tr>
<td>Not for motor type:</td>
<td>-</td>
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<td>Scaling:</td>
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</tr>
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<td>Expert list:</td>
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<tr>
<td>Min</td>
<td>- [%]</td>
</tr>
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<tr>
<td>Factory setting</td>
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</table>

**Description:**
Display and connector output for the speed controller's output value.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
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<th>Calculated:</th>
<th>Access level:</th>
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<tbody>
<tr>
<td>r52161</td>
<td>CO: Speed controller proportional component output value / P comp outp val</td>
<td>-</td>
<td>-</td>
<td>2</td>
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<tr>
<td>DC_CTRL</td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram: 6815</td>
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<td></td>
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<td>P-Group:</td>
<td>Unit group:</td>
<td>Unit selection:</td>
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<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td></td>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the output value of the proportional component on the speed controller.

<table>
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<tr>
<th>Parameter</th>
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<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52162</td>
<td>CO: Speed controller integral component output value / I_comp outp val</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td></td>
<td>Data type: FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram: 6815</td>
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<tr>
<td></td>
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<td>P-Group:</td>
<td>Unit group:</td>
<td>Unit selection:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not for motor type:</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:** Display and connector output for the integral component of the speed controller's output value.

<table>
<thead>
<tr>
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<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td>r52164</td>
<td>CO: Speed controller setpoint/actual value difference / n_ctr set/act dif</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<tr>
<td>DC_CTRL</td>
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<td>Data type: FloatingPoint32</td>
<td>Dyn. index:</td>
<td>Func. diagram: 6815, 6820</td>
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<tr>
<td></td>
<td></td>
<td>P-Group:</td>
<td>Unit group:</td>
<td>Unit selection:</td>
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<tr>
<td></td>
<td></td>
<td>Not for motor type:</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
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<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:** Display and connector output of the speed setpoint/actual value difference used for the speed controller.

**Dependency:** Refer to: p50620

<table>
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<th>Parameter</th>
<th>Description</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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</thead>
<tbody>
<tr>
<td>r52165</td>
<td>CO: Speed controller setpoint/actual value difference / n_ctr set/act dif</td>
<td>-</td>
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<td>DC_CTRL</td>
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<td>Func. diagram: 6810</td>
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<td></td>
<td>Not for motor type:</td>
<td>Scaling: PERCENT</td>
<td>Expert list: 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Min</td>
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<td>Factory setting</td>
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<td></td>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
</tr>
</tbody>
</table>

**Description:** Display and connector output for the result of the setpoint/actual value difference on the speed controller.

**Dependency:** Refer to: p50621, p50622, p50623, p50624

**Note:** The setpoint/actual value difference (r52165) results from setpoint 1 and 2 (p50621, p50622) and actual value 1 and 2 (p50623, p50624).

<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>r52166</td>
<td>CO: Speed controller actual value selection absolute value / Sel act abs</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>DC_CTRL</td>
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<td>Dyn. index:</td>
<td>Func. diagram: 6810, 6815, 6825, 6900, 8040, 8046</td>
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<td>P-Group:</td>
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<td>Expert list: 1</td>
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<tr>
<td></td>
<td></td>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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</tbody>
</table>

**Description:** Display and connector output of the selected speed actual value as an absolute value on the speed controller.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52167</td>
<td>CO: Speed controller actual value selection / Act sel</td>
<td>Display and connector output of the selected speed actual value on the speed controller.</td>
</tr>
<tr>
<td>r52168</td>
<td>CO: Derivative-action element negative output value / D elem neg outp</td>
<td>Display and connector output for the negative output value of the derivative-action element. Refer to: p50205, p50206, p50627, r52169</td>
</tr>
<tr>
<td>r52169</td>
<td>CO: Derivative-action element output value / D elem outp</td>
<td>Display and connector output for the output value of the derivative-action element. Refer to: p50205, p50206, p50627, r52169</td>
</tr>
<tr>
<td>r52170</td>
<td>CO: RFG speed setpoint after limiting / RFG n_set aft lim</td>
<td>Display and connector output for the speed setpoint after limiting.</td>
</tr>
<tr>
<td>r52171</td>
<td>CO: Friction/inertia compensation output value / Comp outp</td>
<td>Display and connector output of the compensation output value for friction and inertia. Refer to: p50223</td>
</tr>
</tbody>
</table>

**Note:**
If p50223 = 1:
This value is added to the speed controller’s output.
### 2 Parameters

**2.2 List of parameters**

**r52172**  
**CO: Friction compensation output value / Fric comp outp**  
**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6820  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Display and connector output for the friction compensation output value.

**Note:**
If p50697 = 1 signal:
This value is added to the friction and moment of inertia compensation output.

**Dependency:**
Refer to: p50697

**r52173**  
**CO: Inertia compensation output value / Inert comp outp**  
**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6820  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Display and connector output for the moment of inertia compensation output value.

**Dependency:**
Refer to: p50697

**Note:**
If p50697 = 1 signal:
This value is added to the friction and moment of inertia compensation output.

**r52174**  
**CO: Speed controller setpoint smoothed / n_ctr set smooth**  
**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 1  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6810, 6820  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Display and connector output of the smoothed setpoint on the speed controller.

**r52176**  
**CO: Speed controller droop output value / Droop outp val**  
**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6805  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Display and connector output for the droop output value on the speed controller.

**r52177**  
**CO: Band-stop 1 output value / Band-st 1 outp**  
**DC_CTRL**  
- **Can be changed:** -  
- **Calculated:** -  
- **Access level:** 2  
- **Data type:** FloatingPoint32  
- **Dyn. index:** -  
- **Func. diagram:** 6810  
- **P-Group:** -  
- **Unit group:** -  
- **Unit selection:** -  
- **Not for motor type:** -  
- **Scaling:** PERCENT  
- **Expert list:** 1  
- **Min:** - [%]  
- **Max:** - [%]  
- **Factory setting:** - [%]  

**Description:** Display and connector output for output value of band-stop 1.

**Dependency:**
Refer to: p50201, p50202, p50628
| Parameter ID | Description                                                                 | Data type      | Dynamic index | Function diagram | Access level | Expert list | Unit group | Unit selection | Factory setting | Not for motor type | Scaling          | Access level | Calculated | Dyn. index | Unit group | Unit selection | Factory setting | Calculated | Dyn. index | Unit group | Unit selection | Factory setting | Not for motor type | Scaling          | Access level | Calculated | Dyn. index | Unit group | Unit selection | Factory setting |
|-------------|-----------------------------------------------------------------------------|----------------|---------------|-----------------|---------------|-------------|-------------|--------------|----------------|-----------------|----------------|-----------------|-------------|------------|------------|------------|-------------|----------------|-------------|------------|-------------|--------------|----------------|-----------------|----------------|-------------|------------|------------|------------|-------------|----------------|----------------|
| r52178      | **CO: Band-stop 2 output value / Band-st 2 outp**                               | DC_CTRL        | -             | -               | -             | -           | -           | -            | -              | -               | -              | PERCENT        | 2           | -          | -          | -           | -             | -              | -          | -           | -           | -              | -              | -               | -            | -          | -          | -          | -           | -             | -             |
| r52179      | **CO: Speed controller actual value smoothed / n_ctr act sm**                  | DC_CTRL        | -             | -               | -             | -           | -           | -            | -              | -               | -              | PERCENT        | 1           | -          | -          | -           | -             | -              | -          | -           | -           | -              | -              | -               | -            | -          | -          | -          | -           | -             | -             |
| r52181      | **CO: RFG effective positive setpoint limit / RFG set lim pos**               | DC_CTRL        | -             | -               | -             | -           | -           | -            | -              | -               | -              | PERCENT        | 2           | -          | -          | -           | -             | -              | -          | -           | -           | -              | -              | -               | -            | -          | -          | -          | -           | -             | -             |
| r52182      | **CO: RFG effective negative setpoint limit / RFG set lim neg**               | DC_CTRL        | -             | -               | -             | -           | -           | -            | -              | -               | -              | PERCENT        | 2           | -          | -          | -           | -             | -              | -          | -           | -           | -              | -              | -               | -            | -          | -          | -          | -           | -             | -             |
| r52183      | **CO: RFG speed setpoint before limiting / RFG n_set bef lim**                | DC_CTRL        | -             | -               | -             | -           | -           | -            | -              | -               | -              | PERCENT        | 1           | -          | -          | -           | -             | -              | -          | -           | -           | -              | -              | -               | -            | -          | -          | -          | -           | -             | -             |
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52184</td>
<td>CO: Setpoint processing main setpoint lim neg default 0 / M set neg def 0</td>
<td>Display and connector output for the default value of variable negative main setpoint limiting with index 0.</td>
<td>The value represents the inversion of p50642[0].</td>
</tr>
<tr>
<td>r52185</td>
<td>CO: Setpoint processing main setpoint lim neg default 1 / M set neg def 1</td>
<td>Display and connector output for the default value of variable negative main setpoint limiting with index 1.</td>
<td>The value represents the inversion of p50642[1].</td>
</tr>
<tr>
<td>r52186</td>
<td>CO: Setpoint processing main setpoint lim neg default 2 / M set neg def 2</td>
<td>Display and connector output for the default value of variable negative main setpoint limiting with index 2.</td>
<td>The value represents the inversion of p50642[2].</td>
</tr>
<tr>
<td>r52187</td>
<td>CO: Setpoint processing main setpoint lim neg default 3 / M set neg def 3</td>
<td>Display and connector output for the default value of variable negative main setpoint limiting with index 3.</td>
<td>The value represents the inversion of p50642[3].</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

r52190 CO: RFG speed setpoint output / RFG n_set outp
DC_CTRL
Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 3150, 3151, 3152, 3155
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the speed setpoint calculated by the ramp-function generator.
Dependency: Refer to: p50542

r52191 CO: RFG dy/dt rise in relation to p50542 / RFG dy/dt p50542
DC_CTRL
Can be changed: - Calculated: - Access level: 2
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 3152
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the rise of the ramp-function generator output in relation to the time set in p50542.
Dependency: Refer to: p50542

r52192 CO: RFG setpoint before ramp-function generator / RFG set bef RFG
DC_CTRL
Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 3151, 3152
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the setpoint before the ramp-function generator.
Dependency: Refer to: p50648

r52193 CO: Setpoint processing output to ramp-function generator / Outp to RFG
DC_CTRL
Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 3135
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the setpoint to the ramp-function generator.
Dependency: Refer to: p50648

r52194 CO: Setpoint processing setpoint after reduction / Set after reduc
DC_CTRL
Can be changed: - Calculated: - Access level: 1
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 3135
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: PERCENT Expert list: 1
Min Max Factory setting
- [%] - [%] - [%]
Description: Display and connector output for the sum "main setpoint (limited) + additional setpoint" after setpoint reduction.
Dependency: Refer to: p51607, p51608, r52195
Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r52195</strong></td>
<td><strong>CO: Setpoint processing setpoint before reduction / Set before reduc</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min - [%]&lt;br&gt;Max - [%]&lt;br&gt;Dependency: Refer to: p51607, p51608, r52194&lt;br&gt;Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.</td>
</tr>
<tr>
<td><strong>r52196</strong></td>
<td><strong>CO: Setpoint processing main setpoint upper limit effective / M set up lim eff</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min - [%]&lt;br&gt;Max - [%]&lt;br&gt;Dependency: Refer to: p51607, p51608, r52194&lt;br&gt;Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.</td>
</tr>
<tr>
<td><strong>r52197</strong></td>
<td><strong>CO: Setpoint processing main setpoint lower limit effective / M set low lim eff</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min - [%]&lt;br&gt;Max - [%]&lt;br&gt;Dependency: Refer to: p51607, p51608, r52194&lt;br&gt;Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.</td>
</tr>
<tr>
<td><strong>r52198</strong></td>
<td><strong>CO: Setpoint processing main setpoint before limiting / M_setp bef lim</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min - [%]&lt;br&gt;Max - [%]&lt;br&gt;Dependency: Refer to: p51607, p51608, r52194&lt;br&gt;Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.</td>
</tr>
<tr>
<td><strong>r52201</strong></td>
<td><strong>CO: Creep setpoint output / Creep set outp</strong>&lt;br&gt;Can be changed: -&lt;br&gt;Data type: FloatingPoint32&lt;br&gt;P-Group: -&lt;br&gt;Not for motor type: -&lt;br&gt;Min - [%]&lt;br&gt;Max - [%]&lt;br&gt;Dependency: Refer to: p50440, p50441&lt;br&gt;Note: Setpoint reduction is set via p51608 and activated/de-activated via binector input p51607.</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Dependency</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52202 CO: Jog setpoint output / Jog set outp</td>
<td>Display and connector output for the sum of all jog setpoints (p50436[0 to 7]).</td>
<td>Refer to: p50435, p50436</td>
</tr>
<tr>
<td>r52203 CO: Oscillation square-wave generator setpoint / Oscill sq-w gen</td>
<td>Display and connector output for the square-wave generator.</td>
<td>Refer to: p50480, p50481, p50482, p50483</td>
</tr>
<tr>
<td>r52204 CO: Fixed setpoint output / Fix set outp</td>
<td>Display and connector output for the sum of all fixed setpoints (p50431[0 to 7]).</td>
<td>Refer to: p50430, p50431</td>
</tr>
<tr>
<td>r52206 CO: Creep setpoint output after selection / Cr set outp</td>
<td>Display and connector output of the setpoint dependent upon creep.</td>
<td></td>
</tr>
<tr>
<td>r52207 CO: Jog setpoint output after selection / Jog set outp</td>
<td>Display and connector output of the setpoint dependent upon jog.</td>
<td></td>
</tr>
</tbody>
</table>
## 2 Parameters

### 2.2 List of parameters

#### r52208  
**CO: Oscillation output after selection / Oscil outp aft sel**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
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**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1  
**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:** Display and connector output of the setpoint dependent upon oscillation selection.

**Note:**
- If oscillation is selected (p50485 = 1 signal):
  
r52208 = r52203
- If oscillation is de-selected (p50485 = 0 signal):
  
r52208 = p50484

#### r52209  
**CO: Fixed setpoint output after selection / Fix set outp**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td>1</td>
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</table>

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1  
**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:** Display and connector output of the sum of all fixed setpoints following selection of at least one connector.

**Dependency:** Refer to: p50430, p50431

**Note:**
- If at least one connector has been selected via p50430[0 to 7]:
  
r52209 = r52204
- If no connectors have been selected via p50430[0 to 7]:
  
r52209 = r52210

#### r52210[0...3]  
**CO: RFG positive limiting inverted after RFG / RFG pos lim inv**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>Calculated:</th>
<th>Access level:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1  
**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:** Display and connector output for the signals interconnected and inverted via connector input p50632[0 to 3].

**Index:**
- [0] = Signal p50632[0] inverted

#### r52211  
**CO: Fixed setpoint output after AOP30 / Fix set outp AOP**

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

**Data type:** FloatingPoint32  
**Dyn. index:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** PERCENT  
**Expert list:** 1  
**Min** - [%]  
**Max** - [%]  
**Factory setting** - [%]

**Description:** Display and connector output for the fixed setpoint after intervention from the advanced operator panel 30 (AOP30).

**Dependency:** Refer to: p50433
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>r52240</strong></td>
<td><strong>CO: Motorized potentiometer output / MotP outp</strong></td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
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<td>Access level: 2</td>
</tr>
<tr>
<td>Data type</td>
<td>FloatingPoint32</td>
</tr>
<tr>
<td>Dyn. index</td>
<td>-</td>
</tr>
<tr>
<td>P-Group</td>
<td>-</td>
</tr>
<tr>
<td>Unit group</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>Scaling</td>
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<tr>
<td>Expert list</td>
<td>1</td>
</tr>
<tr>
<td>Factory setting</td>
<td>-</td>
</tr>
<tr>
<td>Description</td>
<td>Display and connector output on the motorized potentiometer.</td>
</tr>
</tbody>
</table>

| **r52241**     | **CO: Motorized potentiometer output dy/dt / MotP outp dy/dt**              |
| DC_CTRL        | Can be changed: -                                                           |
|                | Calculated: -                                                               |
|                | Access level: 2                                                             |
| Data type      | FloatingPoint32                                                             |
| Dyn. index     | -                                                                          |
| P-Group        | -                                                                          |
| Unit group     | -                                                                          |
| Not for motor type | -                                   |
| Min            | - [%]                                                                     |
| Max            | - [%]                                                                     |
| Scaling        | PERCENT                                                                   |
| Expert list    | 1                                                                         |
| Factory setting| -                                                                         |
| Description    | Display and connector output of the dy/dt output on the motorized potentiometer. |

| **r52242**     | **CO: Motorized potentiometer setpoint / MotP set**                         |
| DC_CTRL        | Can be changed: -                                                           |
|                | Calculated: -                                                               |
|                | Access level: 2                                                             |
| Data type      | FloatingPoint32                                                             |
| Dyn. index     | -                                                                          |
| P-Group        | -                                                                          |
| Unit group     | -                                                                          |
| Not for motor type | -                                   |
| Min            | - [%]                                                                     |
| Max            | - [%]                                                                     |
| Scaling        | PERCENT                                                                   |
| Expert list    | 1                                                                         |
| Factory setting| -                                                                         |
| Description    | Display and connector output of the setpoint on the motorized potentiometer. |

| **r52250**     | **CO: Field firing angle after limiting / Fir ang aft lim**                 |
| DC_CTRL        | Can be changed: -                                                           |
|                | Calculated: -                                                               |
|                | Access level: 1                                                             |
| Data type      | FloatingPoint32                                                             |
| Dyn. index     | -                                                                          |
| P-Group        | -                                                                          |
| Unit group     | -                                                                          |
| Not for motor type | -                                   |
| Min            | - [%]                                                                     |
| Max            | - [%]                                                                     |
| Scaling        | PERCENT                                                                   |
| Expert list    | 1                                                                         |
| Factory setting| -                                                                         |
| Description    | Display and connector output for the field firing angle after limiting by the auto-reversing stage. |

| **r52251**     | **CO: Field firing angle before limiting / Fir ang bef lim**                |
| DC_CTRL        | Can be changed: -                                                           |
|                | Calculated: -                                                               |
|                | Access level: 1                                                             |
| Data type      | FloatingPoint32                                                             |
| Dyn. index     | -                                                                          |
| P-Group        | -                                                                          |
| Unit group     | -                                                                          |
| Not for motor type | -                                   |
| Min            | - [%]                                                                     |
| Max            | - [%]                                                                     |
| Scaling        | PERCENT                                                                   |
| Expert list    | 1                                                                         |
| Factory setting| -                                                                         |
| Description    | Displays the field firing angle before limiting by the auto-reversing stage. |
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>S/N</th>
<th>Description</th>
<th>Access level</th>
<th>Data type</th>
<th>Dyn. index</th>
<th>Func. diagram</th>
<th>P-Group</th>
<th>Unit group</th>
<th>Unit selection</th>
<th>Scaling</th>
<th>Expert list</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Not for motor type</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52252</td>
<td>CO: Cl-loop field curr ctrl prectr and field curr controller output / If_ctr prec+ctrl</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6910</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>1</td>
<td>- [%]</td>
<td>- [%]</td>
<td>Display and connector output of the output value from pre-control and the field current controller.</td>
<td></td>
</tr>
<tr>
<td>r52260</td>
<td>CO: Closed-loop field current control current controller output / If_ctr I_ctr outp</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6910</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>1</td>
<td>- [%]</td>
<td>- [%]</td>
<td>Display and connector output for the output in the case of closed-loop field current control.</td>
<td></td>
</tr>
<tr>
<td>r52261</td>
<td>CO: Cl-loop field curr control curr controller proportional comp / If_ctr I_ctr P com</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6910</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>1</td>
<td>- [%]</td>
<td>- [%]</td>
<td>Display and connector output for the proportional component in the case of closed-loop field current control.</td>
<td></td>
</tr>
<tr>
<td>r52262</td>
<td>CO: Cl-loop field curr control curr controller integral comp / If_ctr I_ctr I com</td>
<td>2</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6910</td>
<td>-</td>
<td>-</td>
<td>PERCENT</td>
<td>- [%]</td>
<td>1</td>
<td>- [%]</td>
<td>- [%]</td>
<td>Display and connector output for the integral component in the case of closed-loop field current control.</td>
<td></td>
</tr>
<tr>
<td>r52263</td>
<td>CO: Cl-loop field curr ctrl current controller set/act val diff / If_ctr I_ctr dif</td>
<td>1</td>
<td>FloatingPoint32</td>
<td>-</td>
<td>6910</td>
<td>-</td>
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<td>Display and connector output for the setpoint/actual value difference in the case of closed-loop field current control.</td>
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## 2 Parameters

### 2.2 List of parameters

<table>
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<tr>
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<th>Unit group:</th>
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<th>Min</th>
<th>Max</th>
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<tbody>
<tr>
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<td>r52266</td>
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<td>r52271</td>
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**Dependency:**

Refer to: r50073, p50102, p50613
### Parameters

#### 2.2 List of parameters

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<td>Display and connector output for the lower limit of the field current setpoint.</td>
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<td>r52275</td>
<td>CO: Field current setpoint limiting output after limiting / If lim outp lim</td>
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<td>CO: Field current setpoint limiting output before limiting / If lim outp</td>
<td>Display and connector output for the field current setpoint before field current setpoint limiting.</td>
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| r52277    | CO: EMF controller pre-control and controller output after selection / EMF prec+ctrl sel | Display and connector output from pre-control and EMF controller after selection. | If p50081 = 0:  
  --> r52277 = 100%  
If p50081 = 1:  
  --> r52277 = Sum of EMF controller and EMF pre-control outputs | Refer to: p50081 |
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
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<table>
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<td>Display and connector output of the proportional component on the EMF controller.</td>
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<table>
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### 2 Parameters

#### 2.2 List of parameters

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<td><strong>r52287</strong></td>
<td>CO: Average EMF actual value / EMF act avg</td>
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**Note:**

- **r52284**
  - Display and connector output of the setpoint/actual value difference after droop on the EMF controller.
- **r52285**
  - Display and connector output for the absolute value of the actual value on the EMF controller.
- **r52286**
  - Displays the absolute value of the EMF actual value averaged over the last 3 firing periods (r52287).
  - Note: A value of 100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.
- **r52287**
  - Displays the signed EMF actual value averaged over the last 3 firing periods.
  - Note: 100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.
## 2 Parameters

### 2.2 List of parameters

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<td>Max Factory setting</td>
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<td>Dependency:</td>
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<tr>
<td>Note:</td>
<td>A value of 100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.</td>
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<tr>
<td>Note:</td>
<td>Display and connector output for the motor flux in the case of closed-loop field current control. The value is a percentage of p50102.</td>
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<td>A value of 100% corresponds to p50078[0] * (3 * sqrt(2)) / Pi.</td>
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## 2 Parameters
### 2.2 List of parameters

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</tbody>
</table>

| **r52295** | **CO: Field voltage actual value absolute value / Uf act abs** | |
| DC_CTRL  | Can be changed: - | Calculated: - |
| Data type: | FloatingPoint32 | Dyn. index: - |
| P-Group: | - | Unit group: - |
| Not for motor type: | - | Scaling: PERCENT |
| Min | Max | Factory setting |
| - [%] | - [%] | - [%] |
| **Description:** | Display and connector output for the actual value of the field voltage as an absolute value. |
| **Dependency:** | Refer to: r52296 |
| **Note:** | 100% corresponds to p50078[1] * (3 * sqrt(2)) / Pi. |

| **r52296** | **CO: Field voltage actual value signed / Uf act val sign** | |
| DC_CTRL  | Can be changed: - | Calculated: - |
| Data type: | FloatingPoint32 | Dyn. index: - |
| P-Group: | - | Unit group: - |
| Not for motor type: | - | Scaling: PERCENT |
| Min | Max | Factory setting |
| - [%] | - [%] | - [%] |
| **Description:** | Display and connector output for the signed actual value of the field voltage. |
| **Dependency:** | Refer to: r52295 |
| **Note:** | 100% corresponds to p50078[1] * (3 * sqrt(2)) / Pi. |

| **r52297** | **CO: Output voltage of the thyristor bridge (1C/1D) / U_out 1C/1D** | |
| DC_CTRL  | Can be changed: - | Calculated: - |
| Data type: | FloatingPoint32 | Dyn. index: - |
| P-Group: | - | Unit group: - |
| Not for motor type: | - | Scaling: PERCENT |
| Min | Max | Factory setting |
| - [%] | - [%] | - [%] |
| **Description:** | Output voltage of the thyristor bridge (1C/1D) as percentage (average value between 2 firing pulses) |
| **Note:** | 100% corresponds to p50078[1] * (3 * sqrt(2)) / Pi. |
2 Parameters
2.2 List of parameters

r52298  
**CO: Load connection supplementary current setpoint output / Suppl Ia_set off**

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

**Data type:** FloatingPoint32  
- Dyn. index: -  
- Func. diagram: 6902

**P-Group:** -  
- Unit group: -  
- Unit selection: -

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

**Min**  
- [%]  
- [%]  
- [%]

**Max**  
- [%]  
- [%]  
- [%]

**Description:**  
Load connection:
Display and connector output for the supplementary current setpoint.

**Note:**  
This is used to increase the dynamic response of the voltage control regarding disturbing variable changes when using the SINAMICS DCM as I/R unit or supplying a DC busbar.

A supplementary current setpoint is input, which is calculated according to the following formula:

\[ I_{\text{set, suppl}} = I_d - C \cdot \frac{dU_d}{dt} \]

100 % corresponds to p50072[1]

---

r52301  
**CO: Armature line voltage U-V / Arm V_line U-V**

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

**Data type:** FloatingPoint32  
- Dyn. index: -  
- Func. diagram: 6950

**P-Group:** -  
- Unit group: -  
- Unit selection: -

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

**Min**  
- [%]  
- [%]  
- [%]

**Max**  
- [%]  
- [%]  
- [%]

**Description:**  
Display and connector output for the line voltage U-V in the armature circuit.

---

r52302  
**CO: Armature line voltage V-W / Arm V_line V-W**

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

**Data type:** FloatingPoint32  
- Dyn. index: -  
- Func. diagram: 6950

**P-Group:** -  
- Unit group: -  
- Unit selection: -

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

**Min**  
- [%]  
- [%]  
- [%]

**Max**  
- [%]  
- [%]  
- [%]

**Description:**  
Display and connector output for the line voltage V-W in the armature circuit.

---

r52303  
**CO: Armature line voltage W-U / Arm V_line W-U**

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

**Data type:** FloatingPoint32  
- Dyn. index: -  
- Func. diagram: 6950

**P-Group:** -  
- Unit group: -  
- Unit selection: -

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

**Min**  
- [%]  
- [%]  
- [%]

**Max**  
- [%]  
- [%]  
- [%]

**Description:**  
Display and connector output for the line voltage W-U in the armature circuit.

---

r52304  
**CO: Field line voltage / Field V_line**

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

**Data type:** FloatingPoint32  
- Dyn. index: -  
- Func. diagram: 6910, 6952

**P-Group:** -  
- Unit group: -  
- Unit selection: -

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

**Min**  
- [%]  
- [%]  
- [%]

**Max**  
- [%]  
- [%]  
- [%]

**Description:**  
Display and connector output for the line voltage in the field circuit.
### 2 Parameters

#### 2.2 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>Dyn. index:</th>
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<th>Not for motor type:</th>
<th>Scaling:</th>
<th>Min</th>
<th>Max</th>
<th>Factory setting</th>
<th>Expert list:</th>
<th>Unit group:</th>
<th>Unit selection:</th>
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<tbody>
<tr>
<td>r52305</td>
<td>CO: Average armature line voltage / Arm V_line avg</td>
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<td>Display and connector output for the average line voltage over the 3 phases in the armature circuit.</td>
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<tr>
<td>r52306</td>
<td>CO: Armature line frequency / Arm f_line</td>
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<td>Display and connector output for the line frequency in the armature circuit. The value is a percentage of 50 Hz.</td>
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<td>r52307</td>
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<td>r52309</td>
<td>CO: Calculated motor temperature rise / Calc mot temp rise</td>
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<td>-</td>
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<td>Display and connector output for the calculated motor temperature rise.</td>
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<td>r52310</td>
<td>CO: I2t monitoring thyristor temperature rise / I2t thy temp rise</td>
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<td>PERCENT</td>
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<td>- [%]</td>
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</table>
## 2 Parameters
### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52311[0...1]</td>
<td><strong>CO</strong>: Current actual value of the parallel power units / ( I_a ) par_power_unit</td>
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<td>Scaling: PERCENT</td>
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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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<tr>
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<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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<tr>
<td>Description:</td>
<td>Display and connector output for the current actual values of the cabinet devices with power units connected in parallel.</td>
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<tr>
<td>Index:</td>
<td>[0] = Power unit 1</td>
<td>[1] = Power unit 2</td>
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<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>r52312[0...1]</td>
<td><strong>CO</strong>: I2T thyristor temperature rise of the parallel power units / ( I_{2T} ) par_power_unit</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<td>Min</td>
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<td>Factory setting</td>
</tr>
<tr>
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<td>- [%]</td>
<td>- [%]</td>
<td>- [%]</td>
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<tr>
<td>Description:</td>
<td>Display and connector output for the thyristor temperature rise of the cabinet devices with power units connected in parallel.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index:</td>
<td>[0] = Power unit 1</td>
<td>[1] = Power unit 2</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>This parameter is only active for 6RM80 devices with options Z04, Z05, Z07, Z13 and Z15.</td>
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</table>

<table>
<thead>
<tr>
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<th>Index</th>
<th>Note</th>
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</thead>
<tbody>
<tr>
<td>r52316</td>
<td><strong>CO</strong>: Field line frequency / Field ( f_{line} )</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<td>Scaling: PERCENT</td>
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<td>Min</td>
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<td>Factory setting</td>
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<td></td>
<td>- [%]</td>
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<tr>
<td>Description:</td>
<td>Display and connector output for the field line frequency. The value is a percentage of 50 Hz.</td>
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<td></td>
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<table>
<thead>
<tr>
<th>Parameter ID</th>
<th>Description</th>
<th>Index</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52320</td>
<td><strong>CO</strong>: Armature current control counter EMF ratio / ( V_{counter_ratio} )</td>
<td>Can be changed: -</td>
<td>Calculated: -</td>
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<td>Scaling: -</td>
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<tr>
<td>Description:</td>
<td>Display and connector output of the counter EMF ratio ( \text{EMF}/\text{V}_{\text{line}} ).</td>
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<tr>
<td>Dependency:</td>
<td>Refer to: r52122, r52305</td>
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<tr>
<td>Parameter</td>
<td>Description</td>
<td>Dependency</td>
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<td>------------------------------------------------------------------------------</td>
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<tr>
<td>r52350</td>
<td>CO: Adaptation armature current control output / Adapt Ia_ctrl outp</td>
<td>Display and connector output for the armature current controller adaptation. Refer to: p50572, p50573, p50574</td>
<td></td>
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<tr>
<td>r52355</td>
<td>CO: Adaptation field current control output / Adapt If_ctrl outp</td>
<td>Display and connector output for the field current controller adaptation. Refer to: p50577, p50578</td>
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<tr>
<td>r52401</td>
<td>CO: Fixed value 1 / Fix val 1</td>
<td>Connector output for fixed value 1 set in p50401. Refer to: p50401</td>
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<td>r52402</td>
<td>CO: Fixed value 2 / Fix val 2</td>
<td>Connector output for fixed value 2 set in p50402. Refer to: p50402</td>
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<td>r52403</td>
<td>CO: Fixed value 3 / Fix val 3</td>
<td>Connector output for fixed value 3 set in p50403. Refer to: p50403</td>
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2 Parameters

2.2 List of parameters

<table>
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<td>r52404</td>
<td>Connector output for fixed value 4 set in p50404.</td>
<td>Refer to: p50404</td>
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<td>r52405</td>
<td>Connector output for fixed value 5 set in p50405.</td>
<td>Refer to: p50405</td>
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<td>r52406</td>
<td>Connector output for fixed value 6 set in p50406.</td>
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<td>r52407</td>
<td>Connector output for fixed value 7 set in p50407.</td>
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<tr>
<td>r52408</td>
<td>Connector output for fixed value 8 set in p50408.</td>
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## 2 Parameters
### 2.2 List of parameters

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<td><strong>CO: Fixed value 9 / Fix val 9</strong></td>
<td>Connector output for fixed value 9 set in p50409.</td>
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## 2 Parameters

### 2.2 List of parameters

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<td>PERCENT</td>
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<td>-</td>
<td>Display and connector output for the positive setpoint of the start pulse on the speed controller.</td>
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**Dependency**

- Connectors output for fixed value set in p50414.
- Connectors output for fixed value set in p50415.
- Connectors output for fixed value set in p50416.
- Display and connector output for the positive setpoint of the start pulse on the speed controller.
- Display and connector output for the negative setpoint of the start pulse on the speed controller.
2 Parameters

2.2 List of parameters

r52453 CO: Speed controller start pulse negative setpoint / Start pul neg set

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Description: Display and connector output for the negative setpoint of the start pulse on the speed controller.

r52454 CO: Speed controller start pulse output value / Start pul outp val

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Description: Display and connector output for the output value of the start pulse on the speed controller.

r52510 CO: Master switch setpoint output / Set outp

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Description: Display and connector output for the setpoint prevailing on the 4-step master switch.

r52601 CO: P2P IF receive data word 1 / P2P recv 1

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</tr>
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Description: Display and connector output for word 1 of the receive data on the peer-to-peer interface (P2P IF).

Dependency: Refer to: r52606

r52602 CO: P2P IF receive data word 2 / P2P recv 2

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Description: Display and connector output for word 2 of the receive data on the peer-to-peer interface (P2P IF).

Dependency: Refer to: r52607
### r52603 CO: P2P IF receive data word 3 / P2P recv 3

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
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- **Not for motor type:** -
- **Scaling:** PERCENT
- **Min:** - [%]
- **Max:** - [%]
- **Expert list:** 1
- **Factory setting:** - [%]

**Description:**
Display and connector output for word 3 of the receive data on the peer-to-peer interface (P2P IF).

**Dependency:**
Refer to: r52608

### r52604 CO: P2P IF receive data word 4 / P2P recv 4

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Min:** - [%]
- **Max:** - [%]
- **Expert list:** 1
- **Factory setting:** - [%]

**Description:**
Display and connector output for word 4 of the receive data on the peer-to-peer interface (P2P IF).

**Dependency:**
Refer to: r52609

### r52605 CO: P2P IF receive data word 5 / P2P recv 5

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** FloatingPoint32
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** PERCENT
- **Min:** - [%]
- **Max:** - [%]
- **Expert list:** 1
- **Factory setting:** - [%]

**Description:**
Display and connector output for word 5 of the receive data on the peer-to-peer interface (P2P IF).

**Dependency:**
Refer to: r52610

### r52606.0...15 CO/BO: P2P IF receive data word 1 bit by bit / P2P recv 1 bbb

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Factory setting:** -

**Description:**
Binector output for the bit-by-bit interconnection of word 1 of the receive data on the peer-to-peer interface (P2P IF).

**Bit field:**

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<th>Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
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</thead>
<tbody>
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<td>00</td>
<td>P2P IF receive data bit 0</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
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<td>0</td>
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<td>02</td>
<td>P2P IF receive data bit 2</td>
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<tr>
<td>03</td>
<td>P2P IF receive data bit 3</td>
<td>1</td>
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<td>9300</td>
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### 2 Parameters

#### 2.2 List of parameters

#### Bit field: Bit Signal name 1 signal 0 signal FP

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<th>0 signal</th>
<th>FP</th>
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<td>0</td>
<td>9300</td>
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**Dependency:** Refer to: r52601

### r52608.0...15

#### DC_CTRL

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

**Data type:** Unsigned16
**Dyn. index:** -
**Func. diagram:** 9300

**P-Group:** -
**Unit group:** -
**Unit selection:** -

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

#### Description:

Binector output for the bit-by-bit interconnection of word 2 of the receive data on the peer-to-peer interface (P2P IF).

#### Bit field: Bit Signal name 1 signal 0 signal FP

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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>P2P IF receive data bit 0</td>
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<td>0</td>
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<td>0</td>
<td>9300</td>
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<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>P2P IF receive data bit 4</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>P2P IF receive data bit 5</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>P2P IF receive data bit 6</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>P2P IF receive data bit 7</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>P2P IF receive data bit 8</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>P2P IF receive data bit 9</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>P2P IF receive data bit 10</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>P2P IF receive data bit 11</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>P2P IF receive data bit 12</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>P2P IF receive data bit 13</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>P2P IF receive data bit 14</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>P2P IF receive data bit 15</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r52603

---

SINAMICS DCM
List Manual (LH8), 02/2015, 6RX1800-0ED76 603
### r52609.0...15
**CO/BO: P2P IF receive data word 4 bit by bit / P2P recv 4 bbb**

**DC_CTRL**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:** Binector output for the bit-by-bit interconnection of word 4 of the receive data on the peer-to-peer interface (P2P IF).

**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>P2P IF receive data bit 0</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>01</td>
<td>P2P IF receive data bit 1</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>02</td>
<td>P2P IF receive data bit 2</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>03</td>
<td>P2P IF receive data bit 3</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>04</td>
<td>P2P IF receive data bit 4</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>05</td>
<td>P2P IF receive data bit 5</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>06</td>
<td>P2P IF receive data bit 6</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>07</td>
<td>P2P IF receive data bit 7</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>08</td>
<td>P2P IF receive data bit 8</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>09</td>
<td>P2P IF receive data bit 9</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>10</td>
<td>P2P IF receive data bit 10</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>11</td>
<td>P2P IF receive data bit 11</td>
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<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>12</td>
<td>P2P IF receive data bit 12</td>
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<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>13</td>
<td>P2P IF receive data bit 13</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>14</td>
<td>P2P IF receive data bit 14</td>
<td>1</td>
<td>0</td>
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<tr>
<td>15</td>
<td>P2P IF receive data bit 15</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r52604

### r52610.0...15
**CO/BO: P2P IF receive data word 5 bit by bit / P2P recv 5 bbb**

**DC_CTRL**
- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 9300
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1
- **Min**
- **Max**
- **Factory setting**

**Description:** Binector output for the bit-by-bit interconnection of word 5 of the receive data on the peer-to-peer interface (P2P IF).

**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>P2P IF receive data bit 0</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>01</td>
<td>P2P IF receive data bit 1</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>02</td>
<td>P2P IF receive data bit 2</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>03</td>
<td>P2P IF receive data bit 3</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>04</td>
<td>P2P IF receive data bit 4</td>
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<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>05</td>
<td>P2P IF receive data bit 5</td>
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<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>06</td>
<td>P2P IF receive data bit 6</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>07</td>
<td>P2P IF receive data bit 7</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>08</td>
<td>P2P IF receive data bit 8</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>09</td>
<td>P2P IF receive data bit 9</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>10</td>
<td>P2P IF receive data bit 10</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
<tr>
<td>11</td>
<td>P2P IF receive data bit 11</td>
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<td>0</td>
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<tr>
<td>12</td>
<td>P2P IF receive data bit 12</td>
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<tr>
<td>13</td>
<td>P2P IF receive data bit 13</td>
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<td>9300</td>
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<tr>
<td>14</td>
<td>P2P IF receive data bit 14</td>
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<tr>
<td>15</td>
<td>P2P IF receive data bit 15</td>
<td>1</td>
<td>0</td>
<td>9300</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: r52605
### 2 Parameters

#### 2.2 List of parameters

**r52620.0...15**  
**CO/BO: Binector-connector converter output / Bin/con outp**

- **DC_CTRL**
- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dyn. index: -
- Func. diagram: 9300
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:**
Display and connector output on the binector-connector converter.

**Dependency:**
Refer to: p51117

**Note:**
The individual signals supplied via binector input p51117[0 to 15] are combined to form connector output r52620.

<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>P2P binector-connector converter bit 0</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>P2P binector-connector converter bit 1</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>P2P binector-connector converter bit 2</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>P2P binector-connector converter bit 3</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>P2P binector-connector converter bit 4</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>P2P binector-connector converter bit 5</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>P2P binector-connector converter bit 6</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>P2P binector-connector converter bit 7</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>P2P binector-connector converter bit 8</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>P2P binector-connector converter bit 9</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>P2P binector-connector converter bit 10</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>P2P binector-connector converter bit 11</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>P2P binector-connector converter bit 12</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>P2P binector-connector converter bit 13</td>
<td>1</td>
<td>0</td>
<td>9300</td>
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</tr>
<tr>
<td>14</td>
<td>P2P binector-connector converter bit 14</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>P2P binector-connector converter bit 15</td>
<td>1</td>
<td>0</td>
<td>9300</td>
<td></td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: p51117

**Note:**
The individual signals supplied via binector input p51117[0 to 15] are combined to form connector output r52620.

**r52700[0...15]**  
**CO: Parallel interface master receive data word by word / Master recv wbw**

- **DC_CTRL**
- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 9352
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min
- Max
- Factory setting
- [%]
- [%]
- [%]

**Description:**
Display and connector output of the word-by-word receive data from the master on the parallel interface.

**Index:**

- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52720

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Index</th>
<th>Dependency</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>r52701[0...15]</td>
<td>CO: Parallel interface slave 1 receive data word by word / Slave1 recv wbw</td>
<td>Can be changed: -</td>
<td>Refer to: r52721</td>
<td>The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>r52702[0...15]</td>
<td>CO: Parallel interface slave 2 receive data word by word / Slave2 recv wbw</td>
<td>Can be changed: -</td>
<td>Refer to: r52722</td>
<td>The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.</td>
</tr>
</tbody>
</table>
### r52703[0...15]

**CO: Parallel interface slave 3 receive data word by word / Slave3 recv wbw**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9352</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</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:**
Display and connector output of the word-by-word receive data from slave 3 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52723

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

### r52704[0...15]

**CO: Parallel interface slave 4 receive data word by word / Slave4 recv wbw**

<table>
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<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
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</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>FloatingPoint32</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 9352</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Scaling: PERCENT</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:**
Display and connector output of the word-by-word receive data from slave 4 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52724

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
2 Parameters
2.2 List of parameters

---

<table>
<thead>
<tr>
<th>r52705[0...15]</th>
<th>CO: Parallel interface slave 5 receive data word by word / Slave5 recv wbw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</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>
</tbody>
</table>

**Description:**
Display and connector output of the word-by-word receive data from slave 5 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52725

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

---

<table>
<thead>
<tr>
<th>r52706[0...15]</th>
<th>CO: Parallel interface slave 6 receive data word by word / Slave6 recv wbw</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DC_CTRL</strong></td>
<td><strong>Can be changed:</strong> -</td>
</tr>
<tr>
<td><strong>Data type:</strong></td>
<td>FloatingPoint32</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>
</tbody>
</table>

**Description:**
Display and connector output of the word-by-word receive data from slave 6 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52726

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
2 Parameters

2.2 List of parameters

r52707[0...15] **CO: Parallel interface slave 7 receive data word by word / Slave7 recv wbw**

Can be changed: -  Calculated: -  Access level: 2
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: 9352
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: PERCENT  Expert list: 1
Min - [%]  Max - [%]  Factory setting - [%]

Description: Display and connector output of the word-by-word receive data from slave 7 on the parallel interface.
Index:
[0] = Word 1
[1] = Word 2
[10] = Word 11
[14] = Word 15

Dependency: Refer to: r52727
Note: The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

r52708[0...15] **CO: Parallel interface slave 8 receive data word by word / Slave8 recv wbw**

Can be changed: -  Calculated: -  Access level: 2
Data type: FloatingPoint32  Dyn. index: -  Func. diagram: 9352
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: PERCENT  Expert list: 1
Min - [%]  Max - [%]  Factory setting - [%]

Description: Display and connector output of the word-by-word receive data from slave 8 on the parallel interface.
Index:
[0] = Word 1
[1] = Word 2
[10] = Word 11
[14] = Word 15

Dependency: Refer to: r52728
Note: The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
2 Parameters

2.2 List of parameters

**r52709[0...15]**  
**CO: Parallel interface slave 9 receive data word by word / Slave9 recv wbw**

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</tr>
<tr>
<td></td>
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<td></td>
</tr>
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</table>

**Description:** Display and connector output of the word-by-word receive data from slave 9 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:** Refer to: r52729

**Note:** The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

**r52710[0...15]**  
**CO: Parallel interface slave 10 receive data word by word / Slave10 recv wbw**

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<td>Scaling: PERCENT</td>
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<td>Max</td>
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</tr>
<tr>
<td></td>
<td>- [%]</td>
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<td></td>
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</table>

**Description:** Display and connector output of the word-by-word receive data from slave 10 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:** Refer to: r52730

**Note:** The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
2 Parameters

2.2 List of parameters

r52711[0...15] CO: Parallel interface slave 11 receive data word by word / Slave11 recv wbw

DC_CTRL

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<th>Unit selection:</th>
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Not for motor type: -

Min

- [%]

Max

- [%]

Factory setting

Dependency:

Refer to: r52731

Note:

The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

r52712[0...15] CO: Parallel interface slave 12 receive data word by word / Slave12 recv wbw

DC_CTRL

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Not for motor type: -

Min

- [%]

Max

- [%]

Factory setting

Dependency:

Refer to: r52732

Note:

The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
**r52713[0...15]**

**DC_CTRL**

**Description:**
Display and connector output of the word-by-word receive data from slave 13 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52733

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

**r52714[0...15]**

**DC_CTRL**

**Description:**
Display and connector output of the word-by-word receive data from slave 14 on the parallel interface.

**Index:**
- [0] = Word 1
- [1] = Word 2
- [3] = Word 4
- [8] = Word 9
- [9] = Word 10
- [10] = Word 11
- [14] = Word 15

**Dependency:**
Refer to: r52734

**Note:**
The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
2 Parameters

2.2 List of parameters

r52715[0...15] CO: Parallel interface slave 15 receive data word by word / Slave15 recv wbw

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<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tr>
<tr>
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<td>- [%]</td>
<td></td>
</tr>
</tbody>
</table>

Description: Display and connector output of the word-by-word receive data from slave 15 on the parallel interface.

Index:
0 = Word 1
1 = Word 2
2 = Word 3
3 = Word 4
4 = Word 5
5 = Word 6
6 = Word 7
7 = Word 8
8 = Word 9
9 = Word 10
10 = Word 11
11 = Word 12
12 = Word 13
13 = Word 14
14 = Word 15
15 = Word 16

Dependency: Refer to: r52735

Note: The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.

r52716[0...15] CO: Parallel interface slave 16 receive data word by word / Slave16 recv wbw

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<td>P-Group: -</td>
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<td>Not for motor type: -</td>
<td>Scaling: PERCENT</td>
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<td>Min</td>
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<tr>
<td>- [%]</td>
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</tr>
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</table>

Description: Display and connector output of the word-by-word receive data from slave 16 on the parallel interface.

Index:
0 = Word 1
1 = Word 2
2 = Word 3
3 = Word 4
4 = Word 5
5 = Word 6
6 = Word 7
7 = Word 8
8 = Word 9
9 = Word 10
10 = Word 11
11 = Word 12
12 = Word 13
13 = Word 14
14 = Word 15
15 = Word 16

Dependency: Refer to: r52736

Note: The receive data in word 1 is also available in non-scaled format bit by bit and word by word for further interconnection.
## Parameters

### 2.2 List of parameters

#### r52720.0...15

**CO/BO: Parallel interface master receive word 1 bit by bit / Master recv1 bbb**

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<tr>
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</table>

**Description:**
Display and binector/connector output for receive word 1 from the master on the parallel interface.

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<td>Bit 4</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<td>06</td>
<td>Bit 6</td>
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<td>Bit 7</td>
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</table>

**Dependency:**
Refer to: r52700

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

#### r52721.0...15

**CO/BO: Parallel interface slave 1 receive word 1 bit by bit / Slave1 recv1 bbb**

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</tr>
<tr>
<td>Min</td>
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**Description:**
Display and binector/connector output for receive word 1 from slave 1 on the parallel interface.

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**Dependency:**
Refer to: r52701

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.
### 2 Parameters

#### 2.2 List of parameters

#### r52722.0...15

**CO/BO: Parallel interface slave 2 receive word 1 bit by bit / Slave2 recv1 bbb**

**DC_CTRL**

- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**

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**Dependency:** Refer to: r52702

**Note:** Receive word 1 is also available scaled word by word for further interconnection.

#### r52723.0...15

**CO/BO: Parallel interface slave 3 receive word 1 bit by bit / Slave3 recv1 bbb**

**DC_CTRL**

- **Can be changed:** -
- **Data type:** Unsigned16
- **P-Group:** -
- **Not for motor type:** -
- **Min**
- **Max**

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**Dependency:** Refer to: r52703

**Note:** Receive word 1 is also available scaled word by word for further interconnection.
CO/BO: Parallel interface slave 4 receive word 1 bit by bit / Slave4 recv1 bbb

**Description:**
Display and binector/connector output for receive word 1 from slave 4 on the parallel interface.

**Bit field:**

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**Dependency:**
Refer to: r52704

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

CO/BO: Parallel interface slave 5 receive word 1 bit by bit / Slave5 recv1 bbb

**Description:**
Display and binector/connector output for receive word 1 from slave 5 on the parallel interface.

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**Dependency:**
Refer to: r52705

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.
### 2 Parameters

#### 2.2 List of parameters

**r52726.0...15**

**CO/BO: Parallel interface slave 6 receive word 1 bit by bit / Slave6 recv1 bbb**

**DC_CTRL**

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

**Data type:** Unsigned16  
**Dyn. index:** -  
**Func. diagram:** 9352

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

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**Description:** Display and binector/connector output for receive word 1 from slave 6 on the parallel interface.

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**Dependency:** Refer to: r52706

**Note:** Receive word 1 is also available scaled word by word for further interconnection.

---

**r52727.0...15**

**CO/BO: Parallel interface slave 7 receive word 1 bit by bit / Slave7 recv1 bbb**

**DC_CTRL**

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

**Data type:** Unsigned16  
**Dyn. index:** -  
**Func. diagram:** 9352

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

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**Description:** Display and binector/connector output for receive word 1 from slave 7 on the parallel interface.

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**Dependency:** Refer to: r52707

**Note:** Receive word 1 is also available scaled word by word for further interconnection.
### 2 Parameters

#### 2.2 List of parameters

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### 2 Parameters

#### 2.2 List of parameters

**r52730.0...15**

**CO/BO: Parallel interface slave 10 receive word 1 bit by bit / Slave10 recv1 bbb**

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<td>Unit 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:**
Display and binector/connector output for receive word 1 from slave 10 on the parallel interface.

**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>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>04</td>
<td>Bit 4</td>
<td>Yes</td>
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<td>9352</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>07</td>
<td>Bit 7</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<td>9352</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>10</td>
<td>Bit 10</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<td>11</td>
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<td>12</td>
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<td>9352</td>
</tr>
<tr>
<td>13</td>
<td>Bit 13</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>15</td>
<td>Bit 15</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
</tbody>
</table>

**Dependency:**
Refer to: r52710

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

---

**r52731.0...15**

**CO/BO: Parallel interface slave 11 receive word 1 bit by bit / Slave11 recv1 bbb**

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<td>Dyn. index: -</td>
<td>Func. diagram: 9352</td>
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<tr>
<td>P-Group: -</td>
<td>Unit 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:**
Display and binector/connector output for receive word 1 from slave 11 on the parallel interface.

**Bit field:**

<table>
<thead>
<tr>
<th>Bit</th>
<th>Signal name</th>
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<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Bit 0</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
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<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>04</td>
<td>Bit 4</td>
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<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>05</td>
<td>Bit 5</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>06</td>
<td>Bit 6</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<td>9352</td>
</tr>
<tr>
<td>08</td>
<td>Bit 8</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>10</td>
<td>Bit 10</td>
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<td>15</td>
<td>Bit 15</td>
<td>Yes</td>
<td>No</td>
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</table>

**Dependency:**
Refer to: r52711

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.
2 Parameters

2.2 List of parameters

### r52732.0...15

**CO/BO: Parallel interface slave 12 receive word 1 bit by bit / Slave12 recv1 bbb**

<table>
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<td>Func. diagram: 9352</td>
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<td>Unit 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>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
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</tbody>
</table>

**Description:**
Display and binector/connector output for receive word 1 from slave 12 on the parallel interface.

**Dependency:**
Refer to: r52712

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

**Bit field:**

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</tr>
</thead>
<tbody>
<tr>
<td>00</td>
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</tr>
<tr>
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<td>Bit 1</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>02</td>
<td>Bit 2</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<td>Bit 5</td>
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<td>No</td>
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<tr>
<td>15</td>
<td>Bit 15</td>
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</tbody>
</table>

**Dependency:**
Refer to: r52713

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

### r52733.0...15

**CO/BO: Parallel interface slave 13 receive word 1 bit by bit / Slave12 recv1 bbb**

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<td>Dyn. index: -</td>
<td>Func. diagram: 9352</td>
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<tr>
<td>P-Group: -</td>
<td>Unit group: -</td>
<td>Unit selection: -</td>
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</tr>
<tr>
<td>Not for motor type: -</td>
<td>Scaling: -</td>
<td>Expert list: 1</td>
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</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td></td>
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**Description:**
Display and binector/connector output for receive word 1 from slave 13 on the parallel interface.

**Dependency:**
Refer to: r52713

**Note:**
Receive word 1 is also available scaled word by word for further interconnection.

**Bit field:**

<table>
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<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>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>01</td>
<td>Bit 1</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>02</td>
<td>Bit 2</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>03</td>
<td>Bit 3</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>04</td>
<td>Bit 4</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
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<tr>
<td>05</td>
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<td>9352</td>
</tr>
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<td>08</td>
<td>Bit 8</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>09</td>
<td>Bit 9</td>
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<td>No</td>
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<td>Bit 11</td>
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<td>No</td>
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<td>Bit 12</td>
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<td>9352</td>
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<td>Bit 13</td>
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<td>No</td>
<td>9352</td>
</tr>
<tr>
<td>14</td>
<td>Bit 14</td>
<td>Yes</td>
<td>No</td>
<td>9352</td>
</tr>
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<td>Bit 15</td>
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<td>No</td>
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</table>
## 2 Parameters

### 2.2 List of parameters

#### r52734.0...15 CO/BO: Parallel interface slave 14 receive word 1 bit by bit / Slave14 recv1 bbb

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 9352
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

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<th>Description</th>
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</tr>
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- **Dependency:** Refer to: r52714
- **Note:** Receive word 1 is also available scaled word by word for further interconnection.

#### r52735.0...15 CO/BO: Parallel interface slave 15 receive word 1 bit by bit / Slave15 recv1 bbb

**DC_CTRL**

- **Can be changed:** -
- **Calculated:** -
- **Access level:** 2
- **Data type:** Unsigned16
- **Dyn. index:** -
- **Func. diagram:** 9352
- **P-Group:** -
- **Unit group:** -
- **Unit selection:** -
- **Not for motor type:** -
- **Scaling:** -
- **Expert list:** 1

<table>
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<th>1 signal</th>
<th>0 signal</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Display and binector/connector output for receive word 1 from slave 15 on the parallel interface.</td>
</tr>
<tr>
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<td>Bit 1</td>
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<td></td>
</tr>
<tr>
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<td>15</td>
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</table>

- **Dependency:** Refer to: r52715
- **Note:** Receive word 1 is also available scaled word by word for further interconnection.
2 Parameters

2.2 List of parameters

r52736.0...15  CO/BO: Parallel interface slave 16 receive word 1 bit by bit / Slave16 recv1 bbb
DC_CTRL  
| Can be changed: | - | Calculated: | - | Access level: | 2 |
| Data type: | Unsigned16 | Dyn. index: | - | Func. diagram: | 9352 |
| P-Group: | - | Unit group: | - | Unit selection: | - |
| Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting | - | - |

Description: Display and binector/connector output for receive word 1 from slave 16 on the parallel interface.

Bit field: | Bit | Signal name | 1 signal | 0 signal | FP |
<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>No</td>
<td>9352</td>
<td></td>
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Dependency: Refer to: r52716
Note: Receive word 1 is also available scaled word by word for further interconnection.

r52800  CO: Sequence control operating state / S ctr op state
DC_CTRL  
| Can be changed: | - | Calculated: | - | Access level: | 2 |
| Data type: | Unsigned16 | Dyn. index: | - | Func. diagram: | 2651 |
| P-Group: | - | Unit group: | - | Unit selection: | - |
| Not for motor type: | - | Scaling: | - | Expert list: | 1 |
| Min | Max | Factory setting | - | - |

Description: Display and connector output for the sequence control operating state.
Note: The values correspond to the operating state of the drive (r0002 (DC_CTRL)).

r52900  CO: Optimization run output 0 / Opt run outp 0
DC_CTRL  
| Can be changed: | - | Calculated: | - | Access level: | 2 |
| Data type: | FloatingPoint32 | Dyn. index: | - | Func. diagram: | 2660 |
| P-Group: | - | Unit group: | - | Unit selection: | - |
| Not for motor type: | - | Scaling: | PERCENT | Expert list: | 1 |
| Min | Max | Factory setting | - [%] | - [%] | - [%] |

Description: Display and connector output of output 0 during the optimization run.
2 Parameters

2.2 List of parameters

r52901 CO: Optimization run output 1 / Opt run outp 1

| Description: | Display and connector output of output 1 during the optimization run. |

DC_CTRL

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 2660
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min - [%]
- Max - [%]
- Factory setting - [%]

r52902 CO: Optimization run output 2 / Opt run outp 2

| Description: | Display and connector output of output 2 during the optimization run. |

DC_CTRL

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 2660
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min - [%]
- Max - [%]
- Factory setting - [%]

r52903 CO: Optimization run output 3 / Opt run outp 3

| Description: | Display and connector output of output 3 during the optimization run. |

DC_CTRL

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 2660
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min - [%]
- Max - [%]
- Factory setting - [%]

r52904 CO: Optimization run output 4 / Opt run outp 4

| Description: | Display and connector output of output 4 during the optimization run. |

DC_CTRL

- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: FloatingPoint32
- Dyn. index: -
- Func. diagram: 2660
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: PERCENT
- Expert list: 1
- Min - [%]
- Max - [%]
- Factory setting - [%]

r52921[0...4] CO: Measurement results ASIC 1 raw values / Meas res ASIC1 raw

| Description: | Display and connector output for the raw values from the measurements of Power Stack ASIC 1. |

For devices with 480 V:
- 0 corresponds to -825.0 V
- 32767 corresponds to 0 V
- 65535 corresponds to +825.0 V
2 Parameters

2.2 List of parameters

For devices with 575 V:
- 0 corresponds to -1036.2 V
- 32767 corresponds to 0 V
- 65535 corresponds to +1036.2 V
For devices with 1000 V:
- 0 corresponds to -1795.2 V
- 32767 corresponds to 0 V
- 65535 corresponds to +1795.2 V

Index:
[0] = Phase VU
[1] = Phase VW
[2] = Voltage CV
[3] = Voltage CD
[4] = Voltage S13V

Dependency:
Refer to: r52922, r52923

Note:
This parameter is used solely for internal diagnostics.

---

<table>
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<tr>
<td>Min</td>
<td>Max</td>
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<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Description:
Display and connector output for the raw values from the measurements of Power Stack ASIC 2.
For voltage channels:
- 0 corresponds to -825.0 V
- 32767 corresponds to 0 V
- 65535 corresponds to +825.0 V
For the current channel:
- 49151 corresponds to 0 A
For devices with rated field current = 3A:
- 8218 corresponds to 3 A
For devices with rated field current = 5 A:
- 9065 corresponds to 5 A
For devices with rated field current = 10 A:
- 9065 corresponds to 10 A
For devices with rated field current = 15 A:
- 29108 corresponds to 15 A
For devices with rated field current = 25 A:
- 15746 corresponds to 25 A
For devices with rated field current = 30 A & A7115:
- 9065 corresponds to 30 A
For devices with rated field current = 30 A & A7116:
- 24608 corresponds to 30 A
For devices with rated field current = 40 A:
- 16427 corresponds to 40 A
For devices with rated field current = 85 A:
- 14382 corresponds to 85 A

Index:
[0] = Raw value voltage 3U3W
[1] = Raw value voltage 3C3D
[2] = Raw value field current

Dependency:
Refer to: r52921, r52923

Note:
This parameter is used solely for internal diagnostics.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Parameter</th>
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<th>Index</th>
<th>Dependency</th>
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<td>Can be changed: -</td>
<td>Refer to: r52921, r52922</td>
</tr>
<tr>
<td>DC_CTRL</td>
<td>Display and connector output for raw values when measuring current actual values.</td>
<td>- 0 corresponds to approx. 3 x device rated current in negative direction</td>
<td>This parameter is used solely for internal diagnostics.</td>
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<tr>
<td></td>
<td>The following applies:</td>
<td>- 32767 corresponds to 0 A</td>
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<tr>
<td></td>
<td>- 65535 corresponds to approx. 3 x device rated current in positive direction</td>
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<th>Dependency</th>
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<td>Can be changed: -</td>
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<td>- [V] - [V] - [V]</td>
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<td>Calculated: -</td>
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<th>Dependency</th>
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<td>- [V] - [V] - [V]</td>
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2 Parameters

2.2 List of parameters

Index: [0] = Armature current Ia
[1] = Field current If
[3] = Armature current Ia current transformer II

### CO: Thyristor blocking voltages scan values / V_thyr scan_values

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<td>Unit selection: -</td>
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<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
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<tr>
<td>- [V]</td>
<td>- [V]</td>
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<td><strong>Factory setting</strong></td>
</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Func. diagram:</strong> 6950</td>
</tr>
</tbody>
</table>

#### Index:
- [0] = Blocking voltage thyristor X11
- [1] = Blocking voltage thyristor X12
- [2] = Blocking voltage thyristor X13
- [3] = Blocking voltage thyristor X14
- [4] = Blocking voltage thyristor X15
- [5] = Blocking voltage thyristor X16
- [6] = Blocking voltage thyristor X21
- [7] = Blocking voltage thyristor X22
- [8] = Blocking voltage thyristor X23
- [9] = Blocking voltage thyristor X24
- [10] = Blocking voltage thyristor X25

#### Description:
Display and connector output for the scan values of the thyristor blocking voltages.

### r52960: Armature line zero crossings deviation / Arm line zero dev

<table>
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<th>Description</th>
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<td><strong>P-Group:</strong> -</td>
<td>Unit group: -</td>
</tr>
<tr>
<td><strong>Not for motor type:</strong> -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>- [µs]</td>
<td>- [µs]</td>
</tr>
<tr>
<td><strong>Access level:</strong> 4</td>
<td><strong>Factory setting</strong></td>
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<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Func. diagram:</strong> 6950</td>
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#### Description:
Displays the deviation of the last point in time on the averaged time grid from the last point in time on an original time grid (armature).

### r52961: Field line zero crossings deviation / Field line zero dv

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<td><strong>Not for motor type:</strong> -</td>
<td>Unit selection: -</td>
</tr>
<tr>
<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>- [µs]</td>
<td>- [µs]</td>
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<tr>
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<td><strong>Factory setting</strong></td>
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<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Func. diagram:</strong> 6952</td>
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</tbody>
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#### Description:
Displays the deviation of the last point in time on the averaged time grid from the last point in time on an original time grid (field).

### r52965[0...1]: Line analysis armature line phase offset / Arm line ph offs

<table>
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<th>DC_CTRL</th>
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<td>Unit group: -</td>
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<td><strong>Not for motor type:</strong> -</td>
<td>Unit selection: -</td>
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<td><strong>Min</strong></td>
<td><strong>Max</strong></td>
</tr>
<tr>
<td>- [V]</td>
<td>- [V]</td>
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</tr>
<tr>
<td><strong>Calculated:</strong> -</td>
<td><strong>Func. diagram:</strong> 6950</td>
</tr>
</tbody>
</table>

#### Description:
Displays the DC offset (= direct-current component) of the armature line phases in volts.

#### Index:
- [0] = Armature phase UV
- [1] = Armature phase VW
2 Parameters

2.2 List of parameters

r52966  Line analysis field line phase offset / Field line ph offs
DC_CTRL
Can be changed: - Calculated: - Access level: 4
Data type: FloatingPoint32 Dyn. index: - Func. diagram: 6952
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - [V] Max - [V] Factory setting

Description: Displays the DC offset (= direct-current component) of the field line phases in volts.

r52970  CO: Line analysis armature line zero crossing positive phase UV / Arm zero pos UV
DC_CTRL
Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dyn. index: - Func. diagram: 6950
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description: Displays the point in time (timer value) of the last positive zero crossing of armature phase UV.
Note: The value is displayed in [10 ns] unit.

r52971  CO: Line analysis armature line zero crossing negative phase UV / Arm zero neg UV
DC_CTRL
Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dyn. index: - Func. diagram: 6950
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description: Displays the point in time (timer value) of the last negative zero crossing of armature phase UV.
Note: The value is displayed in [10 ns] unit.

r52972  CO: Line analysis armature line zero crossing positive phase VW / Arm zero pos VW
DC_CTRL
Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dyn. index: - Func. diagram: 6950
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description: Displays the point in time (timer value) of the last positive zero crossing of armature phase VW.
Note: The value is displayed in [10 ns] unit.

r52973  CO: Line analysis armature line zero crossing negative phase VW / Arm zero neg VW
DC_CTRL
Can be changed: - Calculated: - Access level: 4
Data type: Unsigned32 Dyn. index: - Func. diagram: 6950
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min - Max Factory setting

Description: Displays the point in time (timer value) of the last negative zero crossing of armature phase UV.
Note: The value is displayed in [10 ns] unit.
2 Parameters

2.2 List of parameters

r52974  CO: Line analysis armature line zero crossing positive phase WU / Arm zero pos WU

Can be changed: -  Calculated: -  Access level: 4
Data type: Unsigned32  Dyn. index: -  Func. diagram: 6950
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -

Description: Displays the point in time (timer value) of the last positive zero crossing of armature phase WU.

Note: The value is displayed in [10 ns] unit.

r52975  CO: Line analysis armature line zero crossing negative phase WU / Arm zero neg WU

Can be changed: -  Calculated: -  Access level: 4
Data type: Unsigned32  Dyn. index: -  Func. diagram: 6950
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -

Description: Displays the point in time (timer value) of the last negative zero crossing of armature phase WU.

Note: The value is displayed in [10 ns] unit.

r52976  CO: Line analysis field line zero crossing positive phase F / Field zero pos F

Can be changed: -  Calculated: -  Access level: 4
Data type: Unsigned32  Dyn. index: -  Func. diagram: 6952
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -

Description: Displays the point in time (timer value) of the last positive zero crossing of the field phase.

Note: The value is displayed in [10 ns] unit.

r52977  CO: Line analysis field line zero crossing negative phase F / Field zero neg F

Can be changed: -  Calculated: -  Access level: 4
Data type: Unsigned32  Dyn. index: -  Func. diagram: 6952
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -

Description: Displays the point in time (timer value) of the last negative zero crossing of the field phase.

Note: The value is displayed in [10 ns] unit.

r52980  Cause of the armature firing pulse / Cause arm fir plus

Can be changed: -  Calculated: -  Access level: 4
Data type: Unsigned8  Dyn. index: -  Func. diagram: 8054
P-Group: -  Unit group: -  Unit selection: -
Not for motor type: -  Scaling: -  Expert list: 1
Min -  Max -

Description: Displays the cause of the armature firing pulse.

1: firing angle = firing angle specified by the armature current control (after Alpha G/W limiting).
2: firing angle = Alpha-W (= p50151, as Ia < 0 or Ia = 0 for less than 125 μs).
3: firing angle = Alpha-W (= 165 °, as Ia = 0 for more than 125 μs).
4: The firing angle received from the parallel switching master was issued.
5: The firing angle received from the parallel switching master was no longer able to be realized, as this point in time has already been passed.
6: For a 12-pulse series circuit, a firing pulse delayed by 30 ° was output.
7: The firing angle specified by the thyristor check function was realized.
8: The master firing angle specified by the sequential phase control was realized.
9: The slave firing angle specified by the sequential phase control was realized.
1x: firing angle = next possible point in time: firing angle update was not able to be realized.
2x: firing angle = next possible point in time: new firing angle was not able to be realized.
3x: firing angle = next possible point in time: calculated firing angle was not able to be realized.

Note:
This parameter is only for internal SIEMENS troubleshooting.

<table>
<thead>
<tr>
<th>r52981</th>
<th>Cause of the torque direction / Cause M_dir</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC_CTRL</td>
<td>Can be changed: - Calculated: - Access level: 4</td>
</tr>
<tr>
<td>Data type: Unsigned8</td>
<td>Dyn. index: - Func. diagram: 8054</td>
</tr>
<tr>
<td>P-Group: -</td>
<td>Unit 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</td>
</tr>
</tbody>
</table>

Description: Displays the cause of the torque direction.

0: M0 no torque direction, as not in the operating mode.
1: M0 no torque direction as a firing angle > 165 ° was specified.
2: M0 no torque direction as the wait time according to p50160 is running.
3: M0 no torque direction as the signal selected with p50165 does not permit the required torque direction.
4: M0 no torque direction as the I=0 signal was 125 µs long but however was present for less than 625 µs. The torque-free interval is extended.
5: M0 no torque direction as the thyristor blocking voltage monitoring signals "thyristor conductive". The torque-free interval is extended.
6: M0 no torque direction as the immediate pulse inhibit according to p50177 has been selected.
7: M0 no torque direction, as an emergency stop is present.
8: M0 no torque direction, as the line supply is not OK.
9: M0 no torque direction, as a valid firing instant was not found (for example, this can occur in the slave connected in parallel if the master is lost).
10, 11, 12: M0, MII torque direction = r52106.
15: M0 no torque direction as the selected thyristor pair is inhibited during the thyristor check.
16: M0 no torque direction, as the slave connected in parallel is not in the operating state.
17: M0 no torque direction, as an immediate pulse inhibit was executed, because either an emergency stop is present or the CCP was triggered.
21, 22: MII, MII Alpha-W pulse with second pulse in the old torque direction.
Cause: Ia was still not 625 µs long = 0.
23, 24: MII, MII Alpha-W pulse with second pulse in the old torque direction.
Cause: thyristor blocking voltage monitoring signals "Thyristor conductive"
31, 32: MII, MII Alpha-W pulse without second pulse in the old torque direction.
Cause: Ia was still not 625 µs long = 0.
33, 34: MII, MII Alpha-W pulse without second pulse in the old torque direction.
Cause: thyristor blocking voltage monitoring signals "Thyristor conductive"
2 Parameters
2.2 List of parameters

41, 42:
MI, MII Alpha-W pulse with second pulse in the old torque direction.
Cause: additional Alpha-W pulses according to p50179.
51, 52:
MI, MII Alpha-W pulse without second pulse in the old torque direction.
Cause: additional Alpha-W pulses according to p50161.
60, 61, 62:
M0, MI, MII torque direction according to p51840 (simulation operation).
71: MI the command "simultaneously fire all thyristors" (according to p50176) was performed.
81: MI the torque direction specified by the thyristor check was realized.
82: MII the torque direction specified by the thyristor check was realized.
95, 96, 97:
M0, MI, MII the torque direction of the parallel switching master was realized.

Note:
This parameter is only for internal SIEMENS troubleshooting.

r52982  
Armature current zero current signal / Ia I=0 signal

Can be changed: -  
Calculated: -  
Access level: 4
Data type: Unsigned8  
Dyn. index: -  
Func. diagram: 8054
P-Group: -  
Unit group: -  
Unit selection: -
Not for motor type: -  
Scaling: -  
Expert list: 1
Min -  
Max -  
Factory setting -

Description:
Displays the number of zero current signals of the armature current.
For scan values below the threshold I = 0, the counter is incremented.
The counter is reset in the following cases:
- firing pulse.
- scan value above the threshold for I = 0.

Note:
This parameter is only for internal SIEMENS troubleshooting.
The scan values are every 62.5 µs.
The threshold for I = 0 is 1 % of the rated unit current.

r52983  
Thyristor code / Thyr_code

Can be changed: -  
Calculated: -  
Access level: 4
Data type: Unsigned8  
Dyn. index: -  
Func. diagram: 8054
P-Group: -  
Unit group: -  
Unit selection: -
Not for motor type: -  
Scaling: -  
Expert list: 1
Min -  
Max -  
Factory setting -

Description:
Displays the thyristor code.
Bit 0 = 1: Thyristor 1 was fired
...  
Bit 5 = 1: Thyristor 6 was fired
Bit 6 = 1: thyristors were fired for torque direction 1
Bit 7 = 1: thyristors were fired for torque direction 2

Note:
This parameter is only for internal SIEMENS troubleshooting.
2 Parameters
2.2 List of parameters

**r53010.0...15**

**CO/BO: CUD digital inputs, status / CUD DI status**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram: 2050, 2060, 2065, 2580</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output for the CUD's digital inputs.

**Dependency:**
For bits 08 to 15:
The terminal must be set as an input (p50789[0...3] = 0).

**Note:**
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

<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 (X177.11)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>01</td>
<td>DI 0 inverted (X177.11)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>02</td>
<td>DI 1 (X177.12)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>03</td>
<td>DI 1 inverted (X177.12)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>04</td>
<td>DI 2 (X177.13)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>05</td>
<td>DI 2 inverted (X177.13)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>06</td>
<td>DI 3 (X177.14)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>07</td>
<td>DI 3 inverted (X177.14)</td>
<td>High</td>
<td>Low</td>
<td>2050</td>
</tr>
<tr>
<td>08</td>
<td>DI/DO 4 (X177.15)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>09</td>
<td>DI/DO 4 inverted (X177.15)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>10</td>
<td>DI/DO 5 (X177.16)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>11</td>
<td>DI/DO 5 inverted (X177.16)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>12</td>
<td>DI/DO 6 (X177.17)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>13</td>
<td>DI/DO 6 inverted (X177.17)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>14</td>
<td>DI/DO 7 (X177.18)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>15</td>
<td>DI/DO 7 inverted (X177.18)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
</tbody>
</table>

 Dependency:
For bits 08 to 15:
The terminal must be set as an input (p50789[0...3] = 0).

**Note:**
DI: Digital Input
DI/DO: Bidirectional Digital Input/Output

**r53020.0...7**

**CO/BO: CUD digital outputs status / CUD DO status**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>Func. diagram: 2055, 2060, 2065</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
</tr>
<tr>
<td>Not for motor type:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</td>
</tr>
<tr>
<td>Min</td>
<td>Max</td>
<td>Factory setting</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output for the CUD's digital outputs.

**Dependency:**
For bits 04 to 07:
The terminal must be set as an output (p50789[0...3] = 1).

**Note:**
DO: Digital Output
DI/DO: Bidirectional Digital Input/Output

<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 (X177.19)</td>
<td>High</td>
<td>Low</td>
<td>2055</td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X177.20)</td>
<td>High</td>
<td>Low</td>
<td>2055</td>
</tr>
<tr>
<td>02</td>
<td>DO 2 (X177.21)</td>
<td>High</td>
<td>Low</td>
<td>2055</td>
</tr>
<tr>
<td>03</td>
<td>DO 3 (X177.22)</td>
<td>High</td>
<td>Low</td>
<td>2055</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X177.15)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X177.16)</td>
<td>High</td>
<td>Low</td>
<td>2060</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X177.17)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X177.18)</td>
<td>High</td>
<td>Low</td>
<td>2065</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**r53021.0...7**  
**CO/BO: CUD digital outputs overload monitoring / CUD DO overload**

**DC_CTRL**
- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dyn. index: -
- Func. diagram: 2055, 2060, 2065
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Display and connector output for the overload monitoring of 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>00</td>
<td>DO 0 (X177.19) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2055</td>
</tr>
<tr>
<td>01</td>
<td>DO 1 (X177.20) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2055</td>
</tr>
<tr>
<td>02</td>
<td>DO 2 (X177.21) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2055</td>
</tr>
<tr>
<td>03</td>
<td>DO 3 (X177.22) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2055</td>
</tr>
<tr>
<td>04</td>
<td>DI/DO 4 (X177.15) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2060</td>
</tr>
<tr>
<td>05</td>
<td>DI/DO 5 (X177.16) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2060</td>
</tr>
<tr>
<td>06</td>
<td>DI/DO 6 (X177.17) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2065</td>
</tr>
<tr>
<td>07</td>
<td>DI/DO 7 (X177.18) overload present</td>
<td>Yes</td>
<td>No</td>
<td>2065</td>
</tr>
</tbody>
</table>

**Dependency:** For bits 04 to 07: The terminal must be set as an output (p50789[0...3] = 1).

**Note:**
- DO: Digital Output
- DI/DO: Bidirectional Digital Input/Output

**r53025.0...13**  
**CO/BO: Speed messages / n messages**

**DC_CTRL**
- Can be changed: -
- Calculated: -
- Access level: 2
- Data type: Unsigned16
- Dyn. index: -
- Func. diagram: 8020, 8025
- P-Group: -
- Unit group: -
- Unit selection: -
- Not for motor type: -
- Scaling: -
- Expert list: 1
- Min
- Max
- Factory setting

**Description:** Displays the state of the messages for speed comparisons and limits.

**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>Setpoint/actual value deviation 1 less than threshold</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>01</td>
<td>Setpoint/actual value deviation 1 less than threshold inverted</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>02</td>
<td>Setpoint/actual value deviation 2 less than threshold</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>03</td>
<td>Setpoint/actual value deviation 2 less than threshold inverted</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>04</td>
<td>Comparison setpoint reached</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>05</td>
<td>Comparison setpoint reached inverted</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>06</td>
<td>Deceleration speed reached</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>07</td>
<td>Deceleration speed reached inverted</td>
<td>Yes</td>
<td>No</td>
<td>8020</td>
</tr>
<tr>
<td>08</td>
<td>Positive speed setpoint</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
<tr>
<td>09</td>
<td>Positive speed setpoint inverted</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
<tr>
<td>10</td>
<td>Overspeed</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
<tr>
<td>11</td>
<td>Overspeed inverted</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
<tr>
<td>12</td>
<td>Positive speed actual value</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
<tr>
<td>13</td>
<td>Positive speed actual value inverted</td>
<td>Yes</td>
<td>No</td>
<td>8025</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**r53026.0...1**

**CO/BO: Field current messages / If messages**

<table>
<thead>
<tr>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control word for field current thresholds.</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
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<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 8025</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Unit 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></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max                      Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Control word for field current thresholds.</td>
</tr>
<tr>
<td></td>
<td>Display and connector output for the &quot;Wire break&quot; message in the case of the CUD analog inputs.</td>
</tr>
<tr>
<td></td>
<td>Refer to: F60046, F60047</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>Field current less than minimum field current threshold</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Field current actual value less than field current setpoint x</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**r53030.0...1**

**CO/BO: CUD analog inputs wire break message / CUD AI wire brk**

<table>
<thead>
<tr>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display and connector output for the &quot;Wire break&quot; message in the case of the CUD analog inputs.</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2075, 2080</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Unit 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></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max                      Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the &quot;Wire break&quot; message in the case of the CUD analog inputs.</td>
</tr>
<tr>
<td></td>
<td>Refer to: F60046, F60047</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>AI &quot;Main setpoint&quot; wire-break monitoring responded</td>
<td>Yes</td>
<td>No</td>
<td>2075</td>
</tr>
<tr>
<td>01</td>
<td>AI 1 (X177.27/28) Wire-break monitoring responded</td>
<td>Yes</td>
<td>No</td>
<td>2080</td>
</tr>
</tbody>
</table>

**r53081.0...1**

**CO/BO: Sequence control line contactor control / Ctrl line cont**

<table>
<thead>
<tr>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display and connector output for the line contactor control.</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2651</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Unit 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></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max                      Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Display and connector output for the line contactor control.</td>
</tr>
<tr>
<td></td>
<td>Refer to: F60046, F60047</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>Line contactor</td>
<td>ON</td>
<td>OFF</td>
<td>2651</td>
</tr>
<tr>
<td>01</td>
<td>Line contactor inverted</td>
<td>ON</td>
<td>OFF</td>
<td>2651</td>
</tr>
</tbody>
</table>

**r53082.0**

**CO/BO: Line contactor state / Line cont state**

<table>
<thead>
<tr>
<th>Description</th>
<th>DC_CTRL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Displays the status of the line contactor control.</td>
<td>Can be changed: -</td>
</tr>
<tr>
<td></td>
<td>Calculated: -</td>
</tr>
<tr>
<td></td>
<td>Access level: 2</td>
</tr>
<tr>
<td></td>
<td>Data type: Unsigned16</td>
</tr>
<tr>
<td></td>
<td>Dyn. index: -</td>
</tr>
<tr>
<td></td>
<td>Func. diagram: 2070</td>
</tr>
<tr>
<td></td>
<td>P-Group: -</td>
</tr>
<tr>
<td></td>
<td>Unit 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></td>
<td>Min</td>
</tr>
<tr>
<td></td>
<td>Max                      Factory setting</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>-</td>
</tr>
<tr>
<td>Description:</td>
<td>Displays the status of the line contactor control.</td>
</tr>
<tr>
<td></td>
<td>Refer to: p51619</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>Line contactor ON</td>
<td>Yes</td>
<td>No</td>
<td>2070</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

Note: Re bit 00:
1 signal: The relay output for the line contactor is activated via binector input p51619.
0 signal: The relay output for the line contactor is de-activated via binector input p51619.

r53100.0...1 CO/BO: E stop status / E stop stat

<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>No E stop</td>
<td>Yes</td>
<td>No</td>
<td>2070, 2580</td>
</tr>
<tr>
<td>01</td>
<td>E stop active</td>
<td>Yes</td>
<td>No</td>
<td>2070</td>
</tr>
</tbody>
</table>

r53120.0...3 CO/BO: Motor control checks / Mot mon state

<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>Brush length too short</td>
<td>Yes (fault)</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Poor bearing condition</td>
<td>Yes (fault)</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Motor fan fault</td>
<td>Yes (fault)</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Motor temperature too high</td>
<td>Yes (fault)</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p50486, p50487, p50488, p50489
Refer to: F60025, F60026, F60027, F60028

r53130.0...1 CO/BO: Motor interface temperature monitoring state / Mot temp_mon

<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>Motor temperature alarm</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Motor temperature fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p50490, p50491, p50492
Refer to: F60029, A60032
### 2 Parameters

#### 2.2 List of parameters

**r53135.0...12**

**CO/BO: Device fan state / Dev fan state**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: -</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>
</tbody>
</table>

**Description:**
Display and connector output/binector output for the state of the device fan.

**Dependency:**
Refer to: p50082, p50096

**Note:**
- No fans
- 2 DC fans
- 1 AC fan

Re bits 8 ... 11:
These bits are not effective on the Control Module.

Re bit 12:
This bit is only effective on the Control 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>Switch on fan</td>
<td>ON</td>
<td>OFF</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>Switch on fan inverted</td>
<td>ON</td>
<td>OFF</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Fan 1 speed OK</td>
<td>Yes</td>
<td>No (too low)</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Fan 2 speed OK</td>
<td>Yes</td>
<td>No (too low)</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Fan 3 speed OK</td>
<td>Yes</td>
<td>No (too low)</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fan 4 speed OK</td>
<td>Yes</td>
<td>No (too low)</td>
<td>8047</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Control Module fan speed OK</td>
<td>Yes</td>
<td>No</td>
<td>8049</td>
<td></td>
</tr>
</tbody>
</table>

**r53136**

**Device fan present / Device_fan pres**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 6960</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>
</tbody>
</table>

**Description:**
Displays the integrated device fan.

**Dependency:**
Refer to: F60167

**Note:**
Dependent upon the order number (MLFB), the fan configuration may be as follows:
- No fans
- 2 DC fans
- 1 AC fan

Re bits 8 ... 11:
These bits are not effective on the Control Module.

Re bit 12:
This bit is only effective on the Control 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>DC fan 1</td>
<td>Available</td>
<td>Not present</td>
<td>6960</td>
<td></td>
</tr>
<tr>
<td>01</td>
<td>DC fan 2</td>
<td>Available</td>
<td>Not present</td>
<td>6960</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>AC fan 1</td>
<td>Available</td>
<td>Not present</td>
<td>6960</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>AC fan 2</td>
<td>Available</td>
<td>Not present</td>
<td>6960</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Control Module fan</td>
<td>Available</td>
<td>Not present</td>
<td>6960</td>
<td></td>
</tr>
</tbody>
</table>

**r53140.0...4**

**CO/BO: Fan and external fault / Fan ext F**

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed: -</th>
<th>Calculated: -</th>
<th>Access level: 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index: -</td>
<td>Func. diagram: 8049</td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit 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>
</tbody>
</table>

**Description:**
Display and connector output of the state of the fan and external fault for the Control Module.

**Note:**
For the Control Module, fan "available" is always displayed as the Control Module only has one output to control the fan.

The display is independent of the state of the fan and only indicates the desired state.
### 2 Parameters

#### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Fan ON</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fan ON inverted</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fan relay status</td>
<td>Switched on</td>
<td>Switched off</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>External fault</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>External fault inverted</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

Dependency: Refer to: p51832, p51833, p51834, p51835
Refer to: A60266, F60267

#### r53145.0...13 CO/BO: Line state / Line state

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>6950, 6954</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<td></td>
</tr>
</tbody>
</table>

Description: Displays the state of the line for armature and field.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Armature supply system overvoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Armature supply system undervoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Armature supply system overfrequency</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Armature supply system underfrequency</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Armature supply system phase failure</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Field supply system overvoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Field supply system undervoltage</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Field supply system overfrequency</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Field supply system underfrequency</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Field supply system phase failure</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Armature supply system OK</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Field supply system OK</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Phase rotating clockwise</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Line symmetry</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

#### r53146.0...13 CO/BO: Thyristor state / Thy state

<table>
<thead>
<tr>
<th>DC_CTRL</th>
<th>Can be changed:</th>
<th>-</th>
<th>Calculated:</th>
<th>-</th>
<th>Access level:</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data type:</td>
<td>Unsigned16</td>
<td>Dyn. index:</td>
<td>-</td>
<td>Func. diagram:</td>
<td>6950</td>
<td></td>
</tr>
<tr>
<td>P-Group:</td>
<td>-</td>
<td>Unit group:</td>
<td>-</td>
<td>Unit selection:</td>
<td>-</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>
<td></td>
</tr>
</tbody>
</table>

Description: Display and connector output for the state of the thyristors.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>Bit Signal name</th>
<th>1 signal</th>
<th>0 signal</th>
<th>FP</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Thyristor X11 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Thyristor X12 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Thyristor X13 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Thyristor X14 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Thyristor X15 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Thyristor X16 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Thyristor X21 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Thyristor X22 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Thyristor X23 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Thyristor X24 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Thyristor X25 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Thyristor X26 conducting</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
### 2 Parameters

#### 2.2 List of parameters

**r53147.0...13 CO/BO: Thyristor blocking state / Thy block state**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 6950  
**P-Group:** -  
**Unit group:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  

**Description:** Displays the blocked state of the thyristors.

**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>Thyristor X11</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Thyristor X12</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Thyristor X13</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Thyristor X14</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Thyristor X15</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Thyristor X16</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Thyristor X2</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Thyristor X22</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Thyristor X23</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Thyristor X25</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
<tr>
<td>13</td>
<td>Thyristor X26</td>
<td>Blocking</td>
<td>Inhibited</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:** The blocked state is only relevant for the state "non-conducting" (r53146.x = 0).

**r53148.0...1 CO/BO: Power unit I2t state / PU I2t state**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 8042  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  

**Description:** Displays the state of the I2t monitoring 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>I2t power unit response threshold exceeded</td>
<td>Yes</td>
<td>No</td>
<td>8042</td>
</tr>
<tr>
<td>01</td>
<td>I2t power unit response threshold exceeded and saved</td>
<td>Yes</td>
<td>No</td>
<td>8042</td>
</tr>
</tbody>
</table>

**r53149.0 CO/BO: Power unit properties / PU properties**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 6840, 6960, 6965  
**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min**  
**Max**  
**Factory setting**  

**Description:** Display and BICO output for properties 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>4Q power unit</td>
<td>Yes</td>
<td>No</td>
<td>6960</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

| Parameter | Description | Bit field | Data type | P-Group | Unit group | Unit selection | Expert list | Min | Max | Factory setting |
|-----------|-------------|-----------|-----------|---------|------------|---------------|-------------|-----|-----|----------------|}
| r53170.4...15 | CO/BO: Setpoint processing control word / Set proc STW | DC_CTRL | Can be changed: - | Calculated: - | Access level: 2 | Data type: Unsigned16 | Dyn. index: - | Func. diagram: 2585 | P-Group: - | Unit group: - | Unit selection: - | Not for motor type: - | Scaling: - | Expert list: 1 | Min | Max | Factory setting | |

Description:
Displays the state on the speed limiting controller and with regard to torque limiting.

Description:
Display and connector output for the state of armature current limitation.

Description:
Display and BICO output to enable the speed controller.

Description:
Control word for setpoint processing.
## 2 Parameters

### 2.2 List of 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>04</td>
<td>Direction of rotation enable</td>
<td>No enable</td>
<td>Enable</td>
<td>3135</td>
</tr>
<tr>
<td>08</td>
<td>Jog ON command</td>
<td>ON</td>
<td>OFF</td>
<td>3125</td>
</tr>
<tr>
<td>09</td>
<td>Creep ON command</td>
<td>ON</td>
<td>OFF</td>
<td>3130</td>
</tr>
<tr>
<td>10</td>
<td>Fixed setpoint bypass ramp-function generator</td>
<td>ON</td>
<td>OFF</td>
<td>3115</td>
</tr>
<tr>
<td>11</td>
<td>Jog setpoint bypass ramp-function generator</td>
<td>ON</td>
<td>OFF</td>
<td>3125</td>
</tr>
<tr>
<td>12</td>
<td>Creep setpoint bypass ramp-function generator</td>
<td>ON</td>
<td>OFF</td>
<td>3130</td>
</tr>
<tr>
<td>13</td>
<td>Fixed setpoint input active</td>
<td>Yes</td>
<td>No</td>
<td>3115</td>
</tr>
<tr>
<td>14</td>
<td>Setpoint from AOP/PC active</td>
<td>Yes</td>
<td>No</td>
<td>3113</td>
</tr>
<tr>
<td>15</td>
<td>Jog setpoint is zero</td>
<td>Yes</td>
<td>No</td>
<td>3125</td>
</tr>
</tbody>
</table>

#### CO/BO: RFG state / RFG state

**DC_CTRL**  
Can be changed: -  
Calculated: -  
Access level: 2  
Data type: Unsigned16  
Dyn. index: -  
Func. diagram: 3150, 3151, 3152, 3155  
P-Group: -  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min | Max  
---|---  
Factory setting  

<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>Limiting active after ramp-function generator</td>
<td>Yes</td>
<td>No</td>
<td>3155</td>
</tr>
<tr>
<td>01</td>
<td>RFG output equals zero</td>
<td>Yes</td>
<td>No</td>
<td>3152</td>
</tr>
<tr>
<td>02</td>
<td>RFG ramping up</td>
<td>Yes</td>
<td>No</td>
<td>3150, 3152</td>
</tr>
<tr>
<td>03</td>
<td>RFG ramping down</td>
<td>Yes</td>
<td>No</td>
<td>3150, 3152</td>
</tr>
<tr>
<td>04</td>
<td>RFG setpoint enable present</td>
<td>Yes</td>
<td>No</td>
<td>3151</td>
</tr>
<tr>
<td>05</td>
<td>RFG active</td>
<td>Yes</td>
<td>No</td>
<td>3150</td>
</tr>
</tbody>
</table>

#### CO/BO: Armature auto-reversing stage state / Arm stage state

**DC_CTRL**  
Can be changed: -  
Calculated: -  
Access level: 2  
Data type: Unsigned16  
Dyn. index: -  
Func. diagram: 6815, 6855, 6860, 6862, 8046  
P-Group: -  
Unit group: -  
Unit selection: -  
Not for motor type: -  
Scaling: -  
Expert list: 1  
Min | Max  
---|---  
Factory setting  

<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>Torque direction enabled</td>
<td>M0 or M1</td>
<td>M0 or M1</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Torque direction I active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Torque direction II active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Torque direction 0 requested</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Torque direction I requested</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Torque direction II requested</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>06</td>
<td>Torque direction change in progress</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>07</td>
<td>Alpha G limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>08</td>
<td>Alpha W limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>09</td>
<td>Alpha G limit or Alpha W limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>10</td>
<td>Positive limit of n, M, I, Alpha reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>11</td>
<td>Negative limit of n, M, I, Alpha reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>12</td>
<td>Alpha W shift active</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>
2 Parameters

2.2 List of parameters

---

**r53191.0...2**

**CO/BO: Field auto-reversing stage state / Field stage state**

**DC_CTRL**

<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  
**Dyn. index:** -  
**Func. diagram:** 6910, 6915

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Description:** Displays the state of the auto-reversing stage for field 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>Alpha G limit reached</td>
<td>Yes</td>
<td>No</td>
<td>6910, 6915</td>
</tr>
<tr>
<td>01</td>
<td>Alpha W limit reached</td>
<td>Yes</td>
<td>No</td>
<td>6915</td>
</tr>
<tr>
<td>02</td>
<td>Alpha G/Alpha W limit reached</td>
<td>Yes</td>
<td>No</td>
<td>6915</td>
</tr>
</tbody>
</table>

---

**r53192.0**

**CO/BO: Armature current state / Ia state**

**DC_CTRL**

<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  
**Dyn. index:** -  
**Func. diagram:** 6850

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Description:** Displays the state of the armature current.

**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>Armature current not pulsating</td>
<td>Yes</td>
<td>No</td>
<td>6850</td>
</tr>
</tbody>
</table>

---

**r53193.0...3**

**CO/BO: Field current setpoint limiting state / If lim state**

**DC_CTRL**

<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  
**Dyn. index:** -  
**Func. diagram:** 6900, 6905

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Description:** Control word for field current setpoint limiting.

**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>Positive field current setpoint limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Negative field current setpoint limit reached</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Standstill field switched in</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Field current setpoint withdrawn</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

---

**r53195.0...2**

**CO/BO: Field reversal contactor signals / Field rev cont sig**

**DC_CTRL**

<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  
**Dyn. index:** -  
**Func. diagram:** 6920

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -

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

**Min**  
**Max**  
**Factory setting**

**Description:** Control word to control the field contactors for field reversal.

**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>Field direction positive</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Field direction negative</td>
<td>ON</td>
<td>OFF</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Invert speed actual value</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p50092, p50580, p50581, p50583

---
## Parameters

### r53200.0...1

**CO/BO: Motorized potentiometer state / MotP state**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 3110

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** -  
**Max:** -  

**Description:** Displays the state on 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>Output is zero (y = 0)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Ramp-up/ramp-down complete (y = x)</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
</tbody>
</table>

### r53210.0...5

**CO/BO: Sequence control output signals / Seq_ctrl outp_sig**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 2585, 2651, 2750

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** -  
**Max:** -  

**Description:** Display and BICO output for the sequence control output signals.

**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>Close brake</td>
<td>Yes</td>
<td>No</td>
<td>2585, 2750</td>
</tr>
<tr>
<td>01</td>
<td>Close brake inverted</td>
<td>Yes</td>
<td>No</td>
<td>2750</td>
</tr>
<tr>
<td>02</td>
<td>Switch on auxiliaries</td>
<td>Yes</td>
<td>No</td>
<td>2651</td>
</tr>
<tr>
<td>03</td>
<td>Switch on auxiliaries inverted</td>
<td>Yes</td>
<td>No</td>
<td>2651</td>
</tr>
<tr>
<td>04</td>
<td>Automatic restart active</td>
<td>Yes</td>
<td>No</td>
<td>2651, 2750</td>
</tr>
<tr>
<td>05</td>
<td>Automatic restart active inverted</td>
<td>Yes</td>
<td>No</td>
<td>2651, 2750</td>
</tr>
</tbody>
</table>

### r53220.0...5

**CO/BO: Fuses at X23B state / Fuses X23B**

<table>
<thead>
<tr>
<th>DC_CTRL</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  
**Dyn. index:** -  
**Func. diagram:** 6957

**P-Group:** -  
**Unit group:** -  
**Unit selection:** -  
**Not for motor type:** -  
**Scaling:** -  
**Expert list:** 1  
**Min:** -  
**Max:** -  

**Description:** Display and connector output/binector output for the state of the fuses at X23B. The fuses are monitored via connection A7109:X23B or A7112:X23B.

**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>Fuse XS1</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fuse XS2</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fuse XS3</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fuse XS4</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Fuse XS5</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Fuse XS6</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
</tbody>
</table>

**Dependency:** Refer to: p51831  
Refer to: F60204

**Note:** The fuses are only set to "OK" in operating state o7.0. The fuses are set to "ruptured" in all other operating states. The parameter is only relevant for the Control Module.
### r53221.0...5 CO/BO: Fuses at X23C state / Fuses X23C

<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>Fuse XS1</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fuse XS2</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fuse XS3</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fuse XS4</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Fuse XS5</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Fuse XS6</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output/binector output for the state of the fuses at X23C.

The fuses are monitored via connection A7112:X23C.

**Dependency:**
Refer to: p51831  
Refer to: F60204

**Note:**
The fuses are only set to "OK" in operating state o7.0. The fuses are set to "ruptured" in all other operating states. The parameter is only relevant for the Control Module.

### r53222.0...5 CO/BO: Fuses at X23D state / Fuses X23D

<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>Fuse XS1</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fuse XS2</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fuse XS3</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fuse XS4</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Fuse XS5</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Fuse XS6</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output/binector output for the state of the fuses at X23D.

The fuses are monitored via connection A7112:X23D.

**Dependency:**
Refer to: p51831  
Refer to: F60204

**Note:**
The fuses are only set to "OK" in operating state o7.0. The fuses are set to "ruptured" in all other operating states. The parameter is only relevant for the Control Module.

### r53223.0...5 CO/BO: Fuses at X23E state / Fuses X23E

<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>Fuse XS1</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>01</td>
<td>Fuse XS2</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>02</td>
<td>Fuse XS3</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>03</td>
<td>Fuse XS4</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>04</td>
<td>Fuse XS5</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
<tr>
<td>05</td>
<td>Fuse XS6</td>
<td>Okay</td>
<td>Ruptured</td>
<td>-</td>
</tr>
</tbody>
</table>

**Description:**
Display and connector output/binector output for the state of the fuses at X23E.

The fuses are monitored via connection A7112:X23E.
2 Parameters

2.2 List of parameters

Bit field: Bit Signal name 1 signal 0 signal FP
00 Fuse XS1 Okay Ruptured -
01 Fuse XS2 Okay Ruptured -
02 Fuse XS3 Okay Ruptured -
03 Fuse XS4 Okay Ruptured -
04 Fuse XS5 Okay Ruptured -
05 Fuse XS6 Okay Ruptured -

Dependency:
Refer to: p51831
Refer to: F60204

Note:
The fuses are only set to "OK" in operating state o7.0. The fuses are set to "ruptured" in all other operating states.
The parameter is only relevant for the Control Module.

CO/BO: Fuses at X23F state / Fuses X23F

Can be changed: - Calculated: - Access level: 2
Data type: Unsigned16 Dyn. index: - Func. diagram: 6957
P-Group: - Unit group: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description:
Display and connector output/binector output for the state of the fuses at X23F.
The fuses are monitored via connection A7112:X23F.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Fuse XS1 Okay Ruptured -
01 Fuse XS2 Okay Ruptured -
02 Fuse XS3 Okay Ruptured -
03 Fuse XS4 Okay Ruptured -
04 Fuse XS5 Okay Ruptured -
05 Fuse XS6 Okay Ruptured -

Dependency:
Refer to: p51831
Refer to: F60204

Note:
The fuses are only set to "OK" in operating state o7.0. The fuses are set to "ruptured" in all other operating states.
The parameter is only relevant for the Control Module.

CO/BO: Fixed bit 0 ... 7 / Fix bit 0...7

Can be changed: - Calculated: - Access level: 2
Data type: Unsigned16 Dyn. index: - Func. diagram: 3100
P-Group: - Unit group: - Unit selection: -
Not for motor type: - Scaling: - Expert list: 1
Min Max Factory setting
- - -

Description:
Connector/binector output for fixed bit 0 ... 7.

Bit field: Bit Signal name 1 signal 0 signal FP
00 Fixed bit 0 (p50421) High Low -
01 Fixed bit 1 (p50422) High Low -
02 Fixed bit 2 (p50423) High Low -
03 Fixed bit 3 (p50424) High Low -
04 Fixed bit 4 (p50425) High Low -
05 Fixed bit 5 (p50426) High Low -
06 Fixed bit 6 (p50427) High Low -
07 Fixed bit 7 (p50428) High Low -

Dependency:
Refer to: p50421, p50422, p50423, p50424, p50425, p50426, p50427, p50428
### r53300.0...1
**CO/BO: P2P IF telegram monitoring state / P2P telegram monitoring**

**Description:** Displays the state of telegram monitoring on the peer-to-peer interface (P2P IF).

**Data type:** Unsigned16  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Expert list:** 1  
**Dependency:** Refer to: p50099, p51807  
**Dependency:** Refer to: F60014  

**Note:** The "Telegram monitoring timeout" signal is triggered:
- With binector output r53300.0 as a continuous signal
- With binector output r53300.1 as a one-off pulse with a duration of 1 s

<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>Telegram monitoring timeout</td>
<td>Yes</td>
<td>No</td>
<td>9300</td>
</tr>
<tr>
<td>01</td>
<td>Telegram monitoring timeout and 1 s pulse pending</td>
<td>Yes</td>
<td>No</td>
<td>9300</td>
</tr>
</tbody>
</table>

### r53310.0...1
**CO/BO: Parallel interface telegram monitoring state / Par IF telegr mon state**

**Description:** Displays the state of telegram monitoring on the parallel interface.

**Data type:** Unsigned16  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Expert list:** 1  
**Dependency:** Refer to: p50099, p51807  
**Dependency:** Refer to: F60014

<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>Telegram monitoring timeout - continuous signal</td>
<td>Yes</td>
<td>No</td>
<td>9350</td>
</tr>
<tr>
<td>01</td>
<td>Telegram monitoring timeout - pulse pending</td>
<td>Yes</td>
<td>No</td>
<td>9350</td>
</tr>
</tbody>
</table>

### r53311.0
**CO/BO: Parallel interface master/slave state / Par IF ma/sl state**

**Description:** Displays the state of the parallel interface.

**Data type:** Unsigned16  
**Dyn. index:** -  
**Unit group:** -  
**Scaling:** -  
**Expert list:** 1  
**Dependency:** Refer to: p51800

<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>Active master</td>
<td>Master</td>
<td>Slave</td>
<td>9350</td>
</tr>
</tbody>
</table>

### r53312.0...1
**CO/BO: Topology switchover command / Top_sw command**

**Description:** Display and BICO output to control the contactors to switch over the power unit topology.
## 2 Parameters

### 2.2 List of parameters

<table>
<thead>
<tr>
<th>Dependency:</th>
<th>Refer to: p51790</th>
</tr>
</thead>
</table>

#### 2 Parameters

**Description:** Displays PROFINET Name of Station.

**Notice:** An ASCII table (excerpt) can be found, for example, in the appendix to the List Manual.

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>r61000[0...239]</th>
<th>PROFINET Name of Station / PN Name of Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td>00</td>
<td>Power unit topology 1</td>
<td>Requested</td>
</tr>
<tr>
<td>01</td>
<td>Power unit topology 2</td>
<td>Requested</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bit field:</th>
<th>r61001[0...3]</th>
<th>PROFINET IP of Station / PN IP of Station</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bit</td>
<td>Signal name</td>
<td>1 signal</td>
</tr>
<tr>
<td>00</td>
<td>Power unit topology 1</td>
<td>Requested</td>
</tr>
<tr>
<td>01</td>
<td>Power unit topology 2</td>
<td>Requested</td>
</tr>
</tbody>
</table>

### Bit field: r61000[0...239]

- **CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)**
- **Can be changed:** -
- **Calculated:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Unit group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:** -
- **Max:** -
- **Access level:** 3
- **Func. diagram:** 2410
- **Expert list:** 1
- **Factory setting**

### Bit field: r61001[0...3]

- **CU_DC (PROFINET CBE20), CU_DC_R (PROFINET CBE20), CU_DC_R_S (PROFINET CBE20), CU_DC_S (PROFINET CBE20)**
- **Can be changed:** -
- **Calculated:** -
- **Data type:** Unsigned8
- **P-Group:** -
- **Unit group:** -
- **Not for motor type:** -
- **Scaling:** -
- **Min:** -
- **Max:** -
- **Access level:** 3
- **Func. diagram:** 2410
- **Expert list:** 1
- **Factory setting**

**Description:** Displays PROFINET IP of Station.
2 Parameters

2.3 Parameters for data sets

2.3 Parameters for data sets

2.3.1 Parameters for command data sets (CDS)

Note:

References: SINAMICS DC MASTER operating instructions
“Data sets” Chapter

The following list contains the parameters that are dependent on the command data sets.

Note:

References: SINAMICS DC MASTER operating instructions
“Data sets” Chapter

Product: SINAMICS DC MASTER, Version: 4702900, Language: eng, Type: CDS
Product: SINAMICS DC MASTER OA, Version: 1401800, Language: eng, Type: CDS

- p0700[0...n] Macro Binector Input (BI) / Macro BI
- p0820[0...n] BI: Drive Data Set selection DDS bit 0 / DDS select., bit 0
- p0821[0...n] BI: Drive Data Set selection DDS bit 1 / DDS select., bit 1
- p0840[0...n] BI: ON / OFF (OFF1) / ON / OFF (OFF1)
- p0844[0...n] BI: No coast-down / coast-down (OFF2) signal source 1 / OFF2 S_src 1
- p0845[0...n] BI: No coast-down / coast-down (OFF2) signal source 2 / OFF2 S_src 2
- p0848[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 1 / OFF3 S_src 1
- p0849[0...n] BI: No Quick Stop / Quick Stop (OFF3) signal source 2 / OFF3 S_src 2
- p0852[0...n] BI: Enable operation/inhibit operation / Operation enable
- p0854[0...n] BI: Control by PLC/no control by PLC / Master ctrl by PLC
- p0855[0...n] BI: Unconditionally release holding brake / Uncond open brake
- p0856[0...n] BI: Speed controller enable / n_ctrl enable
- p0858[0...n] BI: Unconditionally close holding brake / Uncond close brake
- p1000[0...n] Macro Connector Inputs (CI) for speed setpoints / Macro CI n_set
- p1035[0...n] BI: Motorized potentiometer setpoint raise / Mop raise
- p1036[0...n] BI: Motorized potentiometer lower setpoint / Mop lower
- p1055[0...n] BI: Jog bit 0 / Jog bit 0
- p1056[0...n] BI: Jog bit 1 / Jog bit 1
- p1070[0...n] CI: Main setpoint / Main setpoint
- p1113[0...n] BI: Setpoint inversion / Setp inv
- p1140[0...n] BI: Enable ramp-function generator/inhibit ramp-function generator / RFG enable
- p1141[0...n] BI: Continue ramp-function generator/freeze ramp-function generator / Continue RFG
- p1142[0...n] BI: Enable setpoint/inhibit setpoint / Setpoint enable
- p1500[0...n] Macro Connector Inputs (CI) for torque setpoints / Macro CI M_set
- p2103[0...n] BI: 1. Acknowledge faults / 1. Acknowledge
- p2104[0...n] BI: 2. Acknowledge faults / 2. Acknowledge
- p2105[0...n] BI: 3. Acknowledge faults / 3. Acknowledge
- p2106[0...n] BI: External fault 1 / External fault 1
- p2107[0...n] BI: External fault 2 / External fault 2
- p2108[0...n] BI: External fault 3 / External fault 3
- p2112[0...n] BI: External alarm 1 / External alarm 1
- p2116[0...n] BI: External alarm 2 / External alarm 2
- p2117[0...n] BI: External alarm 3 / External alarm 3
- p2200[0...n] BI: Technology controller enable / Tec_ctr enable
- p2253[0...n] CI: Technology controller setpoint 1 / Tec_ctr setp 1
- p2254[0...n] CI: Technology controller setpoint 2 / Tec_ctr setp 2
- p2284[0...n] CI: Technology controller actual value / Tec_ctr act val
- p2286[0...n] BI: Hold technology controller integrator / Tec_ctr integ hold
- p2289[0...n] CI: Technology controller pre-control signal / Tec_ctr prectr_sig
- p2296[0...n] CI: Technology controller output scaling / Tec_ctr outp scal
- p2297[0...n] CI: Technology controller maximum limit signal source / Tec_ctrMaxLimS_src
### 2 Parameters for data sets

| p2298[0...n] | CI: Technology controller minimum limit signal source / Tec_ctl min l sig s |
| p2299[0...n] | CI: Technology controller limit offset / Tech_ctl lim offs |
| p3111[0...n] | BI: External fault 3 enable / Ext fault 3 enab |
| p3112[0...n] | BI: External fault 3 enable negated / Ext flt 3 enab neg |
| p50165[0...n] | BI: Signal source for change in torque direction enable / Torq dir en sig s |
| p50173[0...n] | BI: Signal source for closed-loop current/torque control ctr type / Ctr ltq ctr sig s |
| p50175[0...n] | CI: Signal source for closed-loop armature current control P gain / Ia ctr Kp sig s |
| p50176[0...n] | CI: Signal source for closed-loop armature current command / Ia ctr Tn sig s |
| p50177[0...n] | BI: Signal source for the "No immediate pulse inhibit" command / No pulse inh sig s |
| p50178[0...n] | BI: Sig source for the "Fire all thyristors simultaneously" command / All thy fire sig s |
| p50265[0...n] | BI: Signal source for field current monitoring / I_field mon sig s |
| p50266[0...n] | CI: Field current controller Tn factor signal source / If_ctrTnFact sig s |
| p50267[0...n] | CI: Field current controller Kp factor signal source / If_ctrKpFact sig s |
| p50289[0...n] | BI: EMF setpoint reduction activation signal source / EMF set act sig s |
| p50322[0...n] | CI: Setpoint processing signal source for main setpoint factor / M set factor sig s |
| p50323[0...n] | CI: Setpoint processing signal source for additional setpoint factor / Add set fac sig s |
| p50433[0...n] | CI: Signal source for default setpoint / Def set sig s |
| p50438[0...n] | CI: Jog signal source for default setpoint / Jog def set sig s |
| p50443[0...n] | CI: Creep signal source for default setpoint / Cr def set sig s |
| p50444[0...n] | BI: Creep signal source for shutdown / Cr shutdn sig s |
| p50461[0...n] | CI: Motorized potentiometer signal source for automatic setpoint / MotP aut s sig s |
| p50466[0...n] | CI: Motor potentiometer setting value signal source / MotP s val sig s |
| p50470[0...n] | BI: Motorized potentiometer signal source for CW/CCW / MotP CW/CCW sig s |
| p50471[0...n] | BI: Motorized potentiometer signal source for manual/automatic / MotP man/aut sig s |
| p50472[0...n] | BI: Motorized potentiometer accept setting value / MotP acc set val |
| p50485[0...n] | CI: Oscillation signal source for default setpoint / Oscill def set |
| p50500[0...n] | CI: Torque limiting signal source for t_set in slave mode / T_set s mode sig s |
| p50501[0...n] | CI: Torque limiting signal source for torque additional setpoint / T_lim add s sig s |
| p50553[0...n] | CI: Speed controller adaptation Kp signal source / Adapt Kp sig s |
| p50554[0...n] | CI: Speed controller adaptation Tn signal source / Adapt Tn sig s |
| p50555[0...n] | CI: Speed controller adaptation droop signal source / Adapt droop sig s |
| p50580[0...n] | BI: Field reversal direction of rotation signal source / Field rev sig s |
| p50581[0...n] | BI: Field reversal braking signal source / Field rev br sig s |
| p50583[0...n] | CI: Field reversal speed actual value signal source / FidRev n_act sig s |
| p50594[0...n] | CI: Messages polarity speed setpoint signal source / MsgPol n_set S_src |
| p50598[0...n] | CI: Messages polarity speed actual value signal source / MsgPol n_act S_src |
| p50607[0...n] | CI: Torque limiting signal source for master drive t_set / Mst tq set sig s |
| p50609[0...n] | CI: Signal source for speed controller actual value / n_ctr act sig s |
| p50625[0...n] | CI: Signal source for speed controller setpoint / n_ctr set sig s |
| p50626[0...n] | CI: Signal source for speed controller actual value smoothing / Act v smoo sig s |
| p50635[0...n] | CI: Setpoint processing signal source for RFG setpoint / RFG set sig s |
| p50637[0...n] | BI: RFG parameter set 2 selection signal source / RFG par s 2 sig s |
| p50638[0...n] | BI: RFG parameter set 3 selection signal source / RFG par s 3 sig s |
| p50640[0...n] | BI: RFG signal source for accepting setting value / RFG accept set v |
| p50641[0...n] | BI: Bypass ramp-function generator signal source / Bypass RFG sig s |
| p50644[0...n] | CI: Setpoint processing signal source for main setpoint / M set sig s |
| p50645[0...n] | CI: Setpoint processing signal source for additional setpoint / A set sig s |
| p50646[0...n] | BI: RFG signal source for ramp-up integrator enable / R-up int ena sig s |
| p50647[0...n] | BI: RFG tracking activation signal source / RFG trck act sig s |
| p50671[0...n] | BI: Setpoint processing sig source to enable neg dir of rotation / Ena n dir r sig s |
| p50672[0...n] | BI: Setpoint processing signal source to enable pos dir of rotation / Ena p dir r sig s |
| p50673[0...n] | BI: Motorized potentiometer signal source to increase setpoint / MotP incr sig s |
| p50674[0...n] | BI: Motorized potentiometer signal source to lower setpoint / MotP lower sig s |
| p50680[0...n] | BI: Fixed setpoint signal source for connector selection 0 / Fix set con0 sig s |

**SINAMICS DCM**

List Manual (LH8), 02/2015, 6RX1800-0ED76
2 Parameters

2.3 Parameters for data sets

2.3.2 Parameters for drive data sets (DDS)

Note:

References: SINAMICS DC MASTER operating instructions “Data sets” Chapter

The following list contains the parameters that are dependent on the drive data sets.

- Product: SINAMICS DC MASTER, Version: 4702900, Language: eng, Type: DDS
- Product: SINAMICS DC MASTER OA, Version: 1401800, Language: eng, Type: DDS

- 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
- p0340[0...n] Automatic calculation motor/control parameters / Calc auto par
- p1441[0...n] Actual speed smoothing time / n_act T_smooth
- p1821[0...n] Dir of rot / Dir of rot
- p2504[0...n] LR motor/load motor revolutions / Mot/load motor rev
- p2505[0...n] LR motor/load load revolutions / Mot/load load rev
- p2720[0...n] Load gear configuration / Load gear config
- p2721[0...n] Load gear rotary absolute encoder revolutions virtual / Abs rot rev
- p2722[0...n] Load gear position tracking tolerance window / Pos track tol
- r2723[0...n] CO: Load gear absolute value / Load gear abs_val
- r2724[0...n] CO: Load gear position difference / Load gear pos diff
- p2900[0...n] CO: Fixed value 1 [%] / Fixed value 1 [%]
- p2901[0...n] CO: Fixed value 2 [%] / Fixed value 2 [%]
- p2902[0...n] CO: Fixed value M [Nm] / Fixed value M [Nm]
- p50083[0...n] Speed controller actual value selection / n_ctr act sel
- p50100[0...n] Motor rated armature current / Mot rated I_armat
- p50101[0...n] Motor rated armature voltage / Mot rated V_armat
- p50102[0...n] Motor rated excitation current / Mot rated I_exc
- p50103[0...n] Minimum motor excitation current / Mot I_exc min
- p50104[0...n] Speed-dependent current limitation speed n1 / I_lim n_depl n1
- p50105[0...n] Speed-dependent current limitation armature current I1 / I_lim n_depl I1
- p50106[0...n] Speed-dependent current limitation speed n2 / I_lim n_depl n2
- p50107[0...n] Speed-dependent current limitation armature current I2 / I_lim n_depl I2
- p50108[0...n] Speed-dependent current limitation maximum operating speed n3 / I_lim n_depl n3
- p50109[0...n] Speed-dependent current limitation activation / I_lim n_depl act
- p50110[0...n] Armature circuit resistance / Ra
- p50111[0...n] Armature circuit inductance / La
2 Parameters

2.3 Parameters for data sets

- p50112[0...n]: Field circuit resistance / R_field circuit
- p50113[0...n]: Motor I2t monitoring continuous current factor / Mot I2t I_cont
- p50114[0...n]: Motor thermal time constant / Mot T therm
- p50115[0...n]: Speed controller EMF at maximum speed / EMF at n_max
- p50116[0...n]: Field circuit inductance / L_field circuit
- p50117[0...n]: Field characteristic status / Field char stat
- p50118[0...n]: EMF rated value / EMF rated
- p50119[0...n]: Rated speed / n_rated
- p50120[0...n]: Field current for motor flux 0% / I_field flux 0%
- p50121[0...n]: Field current for motor flux 5% / I_field flux 5%
- p50122[0...n]: Field current for motor flux 10% / I_field flux 10%
- p50123[0...n]: Field current for motor flux 15% / I_field flux 15%
- p50124[0...n]: Field current for motor flux 20% / I_field flux 20%
- p50125[0...n]: Field current for motor flux 25% / I_field flux 25%
- p50126[0...n]: Field current for motor flux 30% / I_field flux 30%
- p50127[0...n]: Field current for motor flux 35% / I_field flux 35%
- p50128[0...n]: Field current for motor flux 40% / I_field flux 40%
- p50129[0...n]: Field current for motor flux 45% / I_field flux 45%
- p50130[0...n]: Field current for motor flux 50% / I_field flux 50%
- p50131[0...n]: Field current for motor flux 55% / I_field flux 55%
- p50132[0...n]: Field current for motor flux 60% / I_field flux 60%
- p50133[0...n]: Field current for motor flux 65% / I_field flux 65%
- p50134[0...n]: Field current for motor flux 70% / I_field flux 70%
- p50135[0...n]: Field current for motor flux 75% / I_field flux 75%
- p50136[0...n]: Field current for motor flux 80% / I_field flux 80%
- p50137[0...n]: Field current for motor flux 85% / I_field flux 85%
- p50138[0...n]: Field current for motor flux 90% / I_field flux 90%
- p50139[0...n]: Field current for motor flux 95% / I_field flux 95%
- p50148[0...n]: Armature converter Alpha W limit (single-phase operation) / A Alpha W lim 1-ph
- p50149[0...n]: Armature converter correction angle Alpha W limit / Arm corr Alpha W
- p50150[0...n]: Armature converter Alpha G limit / Arm Alpha G lim
- p50151[0...n]: Armature converter Alpha W limit / Arm Alpha W lim
- p50152[0...n]: Armature average number of line periods / Arm line per no.
- p50153[0...n]: Control word for armature pre-control / A prec STW
- p50154[0...n]: Closed-loop armature current control integral comp activation / Ia ctr I comp act
- p50155[0...n]: Closed-loop armature current control P gain / Ia ctr Kp
- p50156[0...n]: Closed-loop armature current control integral time / Ia ctr Tn
- p50157[0...n]: Current limitation setpoint integrator selection / I_set integ sel
- p50158[0...n]: Current limitation setpoint integrator ramp-up time / Set integ t_r-up
- p50159[0...n]: Auto-reversing stage changeover threshold / Auto-rev thresh
- p50160[0...n]: Auto-reversing stage additional torque-free interval / Auto-rev interval
- p50161[0...n]: Auto-reversing stage Alpha W pulses second pulse inhibited / Auto-rev Alpha W1
- p50162[0...n]: EMF selection / EMF sel
- p50163[0...n]: EMF smoothing selection / EMF smoothing sel
- p50164[0...n]: Closed-loop armature current ctrl proportional comp activation / Ia ctr Kp act
- p50169[0...n]: Torque limiting selection torque limiting/current limitation / T lim sel T/Llim
- p50170[0...n]: Selection of control type for closed-loop current/torque control / Ctrl type I/tq sel
- p50171[0...n]: Current limitation armature current limit torque dir I factor / Ia lim t d I fact
- p50172[0...n]: Current limitation armature current limit torque dir II factor / Ia lim t d II fact
- p50179[0...n]: Auto-reversing stage Alpha W pulses second pulse enabled / Auto-rev Alpha W2
- p50180[0...n]: Torque limiting torque limit 1 positive / T lim 1 pos
- p50181[0...n]: Torque limiting torque limit 1 negative / T lim 1 neg
- p50182[0...n]: Torque limiting torque limit 2 positive / T lim 2 pos
- p50183[0...n]: Torque limiting torque limit 2 negative / T lim 2 neg
- p50184[0...n]: Torque limiting changeover speed / T lim n_chng
2 Parameters

2.3 Parameters for data sets

- \( P50190[\ldots n] \) Cl-loop arm current ctr prectrl setpoint smoothing time constant / \( Ia \) prec set \( T \)
- \( P50191[\ldots n] \) Cl-loop arm current ctr curr controller setp sm time constant / \( Ia \) ctr set \( T \)
- \( P50192[\ldots n] \) Armature Alpha W limit control word / A Alpha W lim STW
- \( P50200[\ldots n] \) Speed controller speed actual value smoothing time constant / \( n_{ctr} n_{act} \) T
- \( P50201[\ldots n] \) Band-stop 1 resonant frequency / Band-st 1 \( f_n \)
- \( P50202[\ldots n] \) Band-stop 1 quality / Band-st 1 quality
- \( P50203[\ldots n] \) Band-stop 2 resonant frequency / Band-st 2 \( f_n \)
- \( P50204[\ldots n] \) Band-stop 2 quality / Band-st 2 quality
- \( P50205[\ldots n] \) Derivative-action element derivative-action time / D-act el \( t_{d-act} \)
- \( P50206[\ldots n] \) Derivative-action element smoothing time / Der-act el \( t_{DAE} \)
- \( P50208[\ldots n] \) Lead/lag element rate time / Lead/lag \( t_{rate} \)
- \( P50209[\ldots n] \) Lead/lag element filter time / Lead/lag \( t_{filter} \)
- \( P50220[\ldots n] \) Speed controller changeover PI/P speed setpoint threshold / PI/P \( n_{set} \) thresh
- \( P50221[\ldots n] \) Speed controller changeover PI/P hysteresis / PI/P hyst
- \( P50222[\ldots n] \) Speed controller changeover PI/P speed actual value threshold / PI/P \( n_{act} \) thresh
- \( P50223[\ldots n] \) Speed controller pre-control enable / \( n_{ctr} \) prec ena
- \( P50224[\ldots n] \) Speed controller integral component configuration / \( n_{ctr} I \) comp conf
- \( P50225[\ldots n] \) Speed controller adaptation \( Kp \) y coordinate 2 / Adapt \( Kp \) y2
- \( P50226[\ldots n] \) Speed controller adaptation \( Tn \) y coordinate 2 / Adapt \( Tn \) y2
- \( P50228[\ldots n] \) Speed controller speed setpoint smoothing time constant / \( n_{ctr} n_{set} \) T
- \( P50229[\ldots n] \) Mast/Si drive ctr speed controller tracking I component / M/S drive ctr track
- \( P50230[\ldots n] \) Set speed controller integral component duration / Set \( I_{compu} \) dur
- \( P50234[\ldots n] \) Speed controller proportional component enable / \( n_{ctr} P_{comp} \) ena
- \( P50237[\ldots n] \) Speed controller reference model natural frequency / \( n_{ctrl} ref_m \) fn
- \( P50238[\ldots n] \) Speed controller reference model damping / \( n_{ctrl} ref_m \) d
- \( P50239[\ldots n] \) Speed controller reference model dead time / \( n_{ctrl} ref_m t_{dead} \)
- \( P50240[\ldots n] \) Speed controller reference model activation / \( n_{ctrl} ref_m \) act
- \( P50250[\ldots n] \) Field converter Alpha G limit / Field Alpha G lim
- \( P50251[\ldots n] \) Field converter Alpha W limit / Field Alpha W lim
- \( P50252[\ldots n] \) Field average number of line periods / Field line per no.
- \( P50253[\ldots n] \) Field pre-control activation / Field prec act
- \( P50254[\ldots n] \) Field current controller integral component activation / \( I_{field} \) ctr I comp
- \( P50255[\ldots n] \) Field current controller \( P \) gain / \( I_{field} \) ctr \( Kp \)
- \( P50256[\ldots n] \) Field current controller integral time / \( I_{field} \) ctr \( Tn \)
- \( P50257[\ldots n] \) Closed-loop field current control standstill field / \( If_{ctr} \) stst_field
- \( P50258[\ldots n] \) Cl-loop field current control standstill field / \( If_{ctr} \) red_\( t_{del} \)
- \( P50260[\ldots n] \) Field current pre-control setpoint smoothing time constant / Field_prec set \( T \)
- \( P50261[\ldots n] \) Field current controller setpoint smoothing time constant / \( I_{field} \) ctr set \( T \)
- \( P50263[\ldots n] \) Selection of motor flux input variable / Mot fl input sel
- \( P50264[\ldots n] \) Field current controller proportional component activation / \( I_{field} \) ctr P comp
- \( P50273[\ldots n] \) EMF controller pre-control activation / EMF ctr prec act
- \( P50274[\ldots n] \) EMF controller integral component activation / EMF ctr I comp act
- \( P50275[\ldots n] \) EMF controller \( P \) gain / EMF ctr \( Kp \)
- \( P50276[\ldots n] \) EMF controller integral time / EMF ctr \( Tn \)
- \( P50277[\ldots n] \) EMF controller droop / EMF ctr droop
- \( P50280[\ldots n] \) EMF controller pre-control setpoint smoothing time constant / EMF_prec set \( T \)
- \( P50281[\ldots n] \) EMF controller setpoint smoothing time constant / EMF ctr set \( T \)
- \( P50282[\ldots n] \) EMF controller actual value smoothing time constant / EMF ctr act \( T \)
- \( P50283[\ldots n] \) EMF controller pre-control actual value smoothing time constant / EMF_prec act \( T \)
- \( P50284[\ldots n] \) EMF controller proportional component activation / EMF ctr P comp act
- \( P50285[\ldots n] \) EMF setpoint reduction line voltage smoothing time / EMF set line \( t_{sm} \)
- \( P50286[\ldots n] \) EMF setpoint reduction line voltage upper limit / EMF set line upper
- \( P50287[\ldots n] \) EMF setpoint reduction line voltage lower limit / EMF set line lower
- \( P50288[\ldots n] \) EMF setpoint reduction evaluation factor / EMF set eval_fact
- \( P50295[\ldots n] \) Transition rounding operating mode / RFG rounding mode
### 2 Parameters

#### 2.3 Parameters for data sets

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<td>p50297[0...n]</td>
<td>RFG quick stop (OFF3) initial rounding / RFG OFF3 init rndg</td>
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<td>p50298[0...n]</td>
<td>RFG quick stop (OFF3) final rounding / RFG OFF3 fin rndg</td>
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<td>p50300[0...n]</td>
<td>RFG positive setpoint limit after ramp-function generator / RFG pos after RFG</td>
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<td>RFG negative setpoint limit after ramp-function generator / RFG neg after RFG</td>
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<td>p50302[0...n]</td>
<td>RFG ramp-up integrator operating mode / RFG integ op mode</td>
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<td>p50304[0...n]</td>
<td>RFG ramp-down time 1 / RFG t_ramp-dn 1</td>
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<td>p50305[0...n]</td>
<td>RFG initial rounding 1 / RFG init rndg 1</td>
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<td>p50306[0...n]</td>
<td>RFG final rounding 1 / RFG fin rndg 1</td>
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<td>p50307[0...n]</td>
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<td>p50308[0...n]</td>
<td>RFG ramp-down time 2 / RFG ramp-dn time 2</td>
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<td>p50309[0...n]</td>
<td>RFG initial rounding 2 / RFG init rndg 2</td>
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<td>p50310[0...n]</td>
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<td>p50311[0...n]</td>
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<td>p50312[0...n]</td>
<td>RFG ramp-down time 3 / RFG t_ramp-dn 3</td>
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<td>p50313[0...n]</td>
<td>RFG initial rounding 3 / RFG init rndg 3</td>
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<td>p50361[0...n]</td>
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<td>p50363[0...n]</td>
<td>Line frequency minimum threshold / f_line min thresh</td>
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<td>p50371[0...n]</td>
<td>Messages for speed less than minimum speed hysteresis / n &lt; n_min hyst</td>
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<td>p50375[0...n]</td>
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<td>p50376[0...n]</td>
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<td>Messages for setpoint/actual value deviation 2 hysteresis / Set/act 2 hyst</td>
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<td>p50378[0...n]</td>
<td>Messages for setpoint/actual value deviation 2 OFF delay / Set/act 2 t_OFF</td>
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<td>p50380[0...n]</td>
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<td>p50388[0...n]</td>
<td>Messages for setpoint/actual value deviation 1 threshold / Set/act 1 thresh</td>
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<td>p50396[0...n]</td>
<td>Field current monitoring setpoint factor / If_mon set_fact</td>
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<td>p50399[0...n]</td>
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<tr>
<td>p50401[0...n]</td>
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</table>
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2.3 Parameters for data sets

- p50402[0...n] Fixed value 2 / Fix val 2
- p50403[0...n] Fixed value 3 / Fix val 3
- p50404[0...n] Fixed value 4 / Fix val 4
- p50405[0...n] Fixed value 5 / Fix val 5
- p50406[0...n] Fixed value 6 / Fix val 6
- p50407[0...n] Fixed value 7 / Fix val 7
- p50408[0...n] Fixed value 8 / Fix val 8
- p50409[0...n] Fixed value 9 / Fix val 9
- p50410[0...n] Fixed value 10 / Fix val 10
- p50411[0...n] Fixed value 11 / Fix val 11
- p50412[0...n] Fixed value 12 / Fix val 12
- p50413[0...n] Fixed value 13 / Fix val 13
- p50414[0...n] Fixed value 14 / Fix val 14
- p50415[0...n] Fixed value 15 / Fix val 15
- p50416[0...n] Fixed value 16 / Fix val 16
- p50421[0...n] Fixed bit 0 / Fixed bit 0
- p50422[0...n] Fixed bit 1 / Fixed bit 1
- p50423[0...n] Fixed bit 2 / Fixed bit 2
- p50424[0...n] Fixed bit 3 / Fixed bit 3
- p50425[0...n] Fixed bit 4 / Fixed bit 4
- p50426[0...n] Fixed bit 5 / Fixed bit 5
- p50427[0...n] Fixed bit 6 / Fixed bit 6
- p50428[0...n] Fixed bit 7 / Fixed bit 7
- p50460[0...n] Motorized potentiometer activate ramp-function generator / Mot pot act RFG
- p50462[0...n] Motorized potentiometer ramp-up time / MotP t_r-up
- p50463[0...n] Motorized potentiometer ramp-down time / MotP t_r-dn
- p50464[0...n] Motorized potentiometer time difference for dy/dt / MotP t_dif dy/dt
- p50465[0...n] Motorized potentiometer expansion factor / MotP exp fact
- p50467[0...n] Motorized potentiometer starting value / MotP start value
- p50468[0...n] Motorized potentiometer maximum speed / MotP n_max
- p50469[0...n] Motorized potentiometer minimum speed / MotP n_min
- p50473[0...n] Motorized potentiometer save output value / MotP save outp val
- p50480[0...n] Oscillation setpoint 1 / Oscill set 1
- p50481[0...n] Oscillation setpoint 1 time / Oscill set 1 t
- p50482[0...n] Oscillation setpoint 2 / Oscill set 2
- p50483[0...n] Oscillation setpoint 2 time / Oscill set 2 t
- p50491[0...n] Motor interface alarm threshold for temperature monitoring / Mot_temp al thr
- p50492[0...n] Motor interface fault threshold for temperature monitoring / Mot_temp flt thr
- p50503[0...n] Torque limiting t_set factor in slave mode / T_set fact sl mode
- p50512[0...n] Speed limiting controller max speed pos direction of rotation / n_max pos dir rot
- p50513[0...n] Speed limiting controller max speed neg direction of rotation / n_max neg dir
- p50515[0...n] Speed limiting controller P gain / n_lim Kp
- p50520[0...n] Friction compensation 0 % speed / Fric comp n 0%
- p50521[0...n] Friction compensation 10 % speed / Fric comp n 10%
- p50522[0...n] Friction compensation 20 % speed / Fric comp n 20%
- p50523[0...n] Friction compensation 30 % speed / Fric comp n 30%
- p50524[0...n] Friction compensation 40 % speed / Fric comp n 40%
- p50525[0...n] Friction compensation 50 % speed / Fric comp n 50%
- p50526[0...n] Friction compensation 60 % speed / Fric comp n 60%
- p50527[0...n] Friction compensation 70 % speed / Fric comp n 70%
- p50528[0...n] Friction compensation 80 % speed / Fric comp n 80%
- p50529[0...n] Friction compensation 90 % speed / Fric comp n 90%
- p50530[0...n] Friction compensation 100 % speed / Fric comp n 100%
- p50540[0...n] Speed controller acceleration time / n_ctr t_accel
- p50542[0...n] RFG dy/dt time difference / RFG dy/dt t_dif
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2.3 Parameters for data sets

- p50543[0...n] Speed controller setpoint/actual value difference threshold / Set/act dif thresh
- p50546[0...n] Smoothing time constant for inertia compensation / Comp inert T
- p50550[0...n] Speed controller adaptation Tn y coordinate 1 / Adapt Tn y1
- p50551[0...n] Speed controller adaptation Tn y coordinate 2 / Adapt Tn y2
- p50556[0...n] Speed controller adaptation Tn x coordinate 1 / Adapt Tn x1
- p50557[0...n] Speed controller adaptation Tn x coordinate 2 / Adapt Tn x2
- p50559[0...n] Speed controller adaptation Kp x coordinate 2 / Adapt Kp x2
- p50560[0...n] Speed controller adaptation Tn x coordinate 2 / Adapt Tn x2
- p50561[0...n] Speed controller adaptation droop x coordinate 2 / Adapt droop x2
- p50562[0...n] Speed controller droop positive limiting / Droop pos lim
- p50563[0...n] Speed controller droop negative limiting / Droop neg lim
- p50570[0...n] Adaptation armature current controller changeover input / Adapt Ia chgov inp
- p50571[0...n] Adaptation armature current controller non-linear L activation / Adapt N_lin L act
- p50572[0...n] Adapt arm curr controller intermittent adapt activation / Adapt Interm Act
- p50573[0...n] Adaptation armature current controller limiting / Adapt Ia_ctrl lim
- p50574[0...n] Adapt arm curr controller intermittent adapt Kp increase / Ad Interm Kp incr
- p50575[0...n] Adaptation field current controller changeover input / Adapt If chgov inp
- p50576[0...n] Adaptation field current controller non-linear L activation / Adapt n_lin act
- p50577[0...n] Adapt field curr controller non-linear gating unit activation / Adapt n_lin GU act
- p50578[0...n] Adaptation field current controller limiting / Adapt If_ctrl lim
- p50701[0...n] CUD analog input 0 scaling / CUD AI 0 scal
- p50711[0...n] CUD analog input 1 scaling / CUD AI 1 scal
- p50721[0...n] CUD analog input 2 scaling / CUD AI 2 scal
- p50741[0...n] Analog input main actual value scaling / AI m act scal
- p51591[0...n] Armature inductance reduction factor / L_armat red fact
- p51592[0...n] Armature commutating inductance / Arm Lk
- p51594[0...n] Interphase inductance in 12-pulse operation / L_intph 12-pulse
- p51595[0...n] Interphase inductance reduction factor / L_intph red fact
- p51596[0...n] Interphase resistance in 12-pulse operation / R_intph 12-pulse
- p51597[0...n] Field inductance reduction factor / L_field red fact
- p51608[0...n] Setpoint processing reduction factor / Red factor
- p51651[0...n] Speed controller start pulse positive setpoint / Start pul pos set
- p51652[0...n] Speed controller start pulse negative factor / Start pul neg fact
- p51653[0...n] Speed controller start pulse negative setpoint / Start pul neg set
- p51861[0...n] Capacitance of the DC link capacitor / Capac_DClink
2 Parameters

2.3 Parameters for data sets

2.3.3 Parameters for encoder data sets (EDS)

Note:

References: SINAMICS DC MASTER operating instructions
“Data sets” Chapter

The following list contains the parameters that are dependent on the encoder data sets.

Product: SINAMICS DC MASTER, Version: 4702900, Language: eng, Type: EDS

- p0141[0...n] Encoder interface (Sensor Module) component number / Enc_interf comp_no
- 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
- p0405[0...n] Square-wave encoder track A/B / Sq-wave enc A/B
- p0407[0...n] Linear encoder grid division / Enc grid div
- p0408[0...n] Rotary encoder pulse number / Rot enc pulse No.
- p0410[0...n] Encoder inversion actual value / Enc inv act value
- p0411[0...n] Measuring gear configuration / Meas gear config
- p0412[0...n] Measuring gear absolute encoder rotary revolutions virtual / Abs rot rev
- p0413[0...n] Measuring gear position tracking tolerance window / Pos track window
- p0414[0...n] Redundant coarse position value relevant bits (identified) / Relevant bits
- p0415[0...n] Gx_XIST1 Coarse position safe most significant bit (identified) / Gx_XIST1 safe MSB
- p0416[0...n] Non-safety-relevant meas. steps position value POS1 (detected) / nsrPos1
- p0417[0...n] Encoder safety comparison algorithm (detected) / Safety comp_algo
- p0418[0...n] Fine resolution Gx_XIST1 (in bits) / Enc fine Gx_XIST1
- p0419[0...n] Fine resolution absolute value Gx_XIST2 (in bits) / Enc fine Gx_XIST2
- p0420[0...n] Encoder connection / Enc_connection
- p0421[0...n] Absolute encoder rotary multiturn resolution / Enc abs multiturn
- p0422[0...n] Absolute encoder linear measuring step resolution / Enc abs meas step
- p0423[0...n] Absolute encoder rotary singleturn resolution / Enc abs singleturn
- p0424[0...n] Encoder linear zero mark distance / Enc lin ZM_dist
- p0425[0...n] Encoder rotary zero mark distance / Enc rot dist ZM
- p0426[0...n] Encoder zero mark differential distance / Enc ZM Dif_dist
- p0427[0...n] Encoder SSI baud rate / Enc SSI baud rate
- p0428[0...n] Encoder SSI monoflop time / Enc SSI t_monoflop
- p0429[0...n] Encoder SSI configuration / Enc SSI config
- p0430[0...n] Sensor Module configuration / SM config
- p0431[0...n] Angular commutation offset / Ang_com offset
- p0432[0...n] Gearbox factor encoder revolutions / Grbx_fact enc_rev
- p0433[0...n] Gearbox factor motor/load revolutions / Grbx_fact mot_rev
- p0434[0...n] Encoder SSI error bit / Enc SSI error bit
- p0435[0...n] Encoder SSI alarm bit / Enc SSI alarm bit
- p0436[0...n] Encoder SSI parity bit / Enc SSI parity bit
- p0437[0...n] Sensor Module configuration extended / SM config ext
- p0438[0...n] Squarewave encoder filter time / Enc_t_filter
- p0439[0...n] Encoder ramp-up time / Enc ramp-up time
- p0440[0...n] Copy encoder serial number / Copy enc ser_no
- p0441[0...n] Encoder commissioning serial number part 1 / Enc comm ser_no 1

Note:

References: SINAMICS DC MASTER operating instructions
“Data sets” Chapter
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#### 2.3 Parameters for data sets

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2.4 Parameters for write protection and know-how protection

2.4 Parameters for write protection and know-how protection

2.4.1 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 DC MASTER, Version: 4702900, 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] Main component detection using LED / M_comp detect LED
- p0144[0...n] Sensor Module detection via LED / SM 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
- p4703[0...1] Trace options / Trace options
- 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_thresh
- p4713[0...1] Trace tolerance band trigger threshold 1 / Trace trig thr 1
- p4714[0...1] Trace tolerance band trigger threshold 2 / Trace trig thr 2
- p4715[0...1] Trace bit mask trigger, bit mask / Trace trig mask
- p4716[0...1] Trace bit mask trigger trigger condition / Trace Triag_cond
- 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
- 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
### 2.4 Parameters for write protection and know-how protection

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<td>MTrace cycle number setting / Cycle number</td>
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2.4 Parameters for write protection and know-how protection

2.4.2 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 DC MASTER, Version: 4702900, 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] Main component detection using LED / M_comp detect LED
- p0144[0...n] Sensor Module detection via LED / SM 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
- p2040 Fieldbus interface monitoring time / Fieldbus t_monit
- 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
- p8805 Identification and maintenance 4 configuration / I&M 4 config
- p8806[0...53] Identification and Maintenance 1 / I&M 1
- p8807[0...15] Identification and Maintenance 2 / I&M 2
- p8808[0...53] Identification and Maintenance 3 / I&M 3
- p8809[0...53] Identification and Maintenance 4 / I&M 4
- p8829 CBE2x remote controller number / CBE2x rem ctrl num
- p8835 CBE20 firmware selection / CBE20 FW sel
- p8839[0...1] PZD interface hardware assignment / PZD IF HW assign
- p8840 COMM BOARD monitoring time / CB t_monit
- p9210 Flashing component number / Flash comp_no
- p9211 Flash function / Flash fct.
- p9400 Safely remove memory card / Mem_card rem
- p9484 BICO interconnections search signal source / BICO S_src srch
2.4 Parameters for write protection and know-how protection

2.4.3 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 DC MASTER, Version: 4702900, Language: eng, Type: KHP_ACTIVE_READ

- p0015 Macro drive unit / Macro drv unit
- p0015 Macro drive object / Macro DO
- p0101[0...n] Drive object numbers / DO numbers
- p0103[0...n] Application-specific view / Appl_spec view
- p0105 Activate/de-activate drive object / DO act/deact
- p0107[0...n] Drive object type / DO type
- p0108[0...n] Drive objects function module / DO fct_mod
- p0121[0...n] Power unit component number / PU comp_no
- p0125[0...n] Activate/de-activate power unit components / PU_comp act/deact
- 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
- p0151 Terminal Module component number / TM 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
- p0400[0...n] Encoder type selection / Enc_typ sel
- p0595 Technological unit selection / Tech unit select
- p0806 BI: Inhibit master control / PcCtrl inhibit
- p0922 IF1 PROFIdrive PZD telegram selection / IF1 PZD telegr
- p0978[0...n] List of drive objects / List of the DO
- p2000 Reference speed / n_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 PROFIdrive STW/ZSW interface mode / PD STW/ZSW IF mode
- p2079 IF1 PROFIdrive PZD telegram selection extended / IF1 PZD telegr ext
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- 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
- p8836 SINAMICS Link address / SINAMICS Link add
- p8870[0...15] SINAMICS Link receive telegram word PZD / Recv link word
- p8871[0...15] SINAMICS Link send telegram word PZD / Send link word
- p8872[0...15] SINAMICS Link address receive PZD / Link addr recv
- p9902 Target topology number of indices / TargetTopo indices
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2.4 Parameters for write protection and know-how protection
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</table>

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</tr>
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<td>------</td>
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3 Function diagrams

3.2 Explanations on the function diagrams

Fig. 3-1 1020 – Explanation of the symbols (part 1)

Parameter
Symbol
Parameter name (unit)
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxx</td>
<td>Display parameter (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[aaaa.b]</td>
<td>Parameter name from ... to [unit] xxxxx[x-z] (Def)</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Adjust parameter (if parameter appears multiple times, diagram references are specified).</td>
</tr>
<tr>
<td>xxxxx</td>
<td>xxxxx[x-z] (Def)</td>
</tr>
</tbody>
</table>

Connectors
Symbol
Parameter name (unit)
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxx</td>
<td>Connector input CI with index range [y-z]</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Connector input CI with index [y]</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Connector output CO with [unit] and index range [y-z] (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y-z])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Connector output CO with [unit] and with index [y] (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>bit yy (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[yy])</td>
</tr>
</tbody>
</table>

Binectors
Symbol
Parameter name
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxx</td>
<td>Binector input BI with index range [y-z] and factory setting (Def.x) with bit x.</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y-z])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Binector input BI with index [y] and factory setting (Def.x) with bit x.</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>(xxxx[y])</td>
</tr>
<tr>
<td>xxxxx</td>
<td>Binector output BO (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[xxxx]</td>
<td></td>
</tr>
<tr>
<td>xxxxx</td>
<td>Binector output BO with bit yy (parameter may appear multiple times)</td>
</tr>
<tr>
<td>[xxxx]</td>
<td></td>
</tr>
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</table>

Connectors/Binectors
Symbol
Parameter name
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>xxxxx</td>
<td>Connector/binector output CO/BO</td>
</tr>
<tr>
<td>[xxxx]</td>
<td></td>
</tr>
</tbody>
</table>

Cross-references between diagrams
Symbol
Text
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>[cccc.d]</td>
<td>The function diagrams are divided into eight signal paths (signal path 1 ... 8) to enable quicker orientation.</td>
</tr>
<tr>
<td>[cccc.d]</td>
<td>Unique signal name</td>
</tr>
<tr>
<td>[cccc.d]</td>
<td>Signal goes to destination diagram</td>
</tr>
<tr>
<td>[cccc.d]</td>
<td>Signal goes to signal path b</td>
</tr>
<tr>
<td>[cccc.d]</td>
<td>Signal comes from source diagram</td>
</tr>
<tr>
<td>[cccc.d]</td>
<td>Signal comes from signal path d</td>
</tr>
</tbody>
</table>

To “Function diagram name” [aaaa.b] = For binectors

Cross-references for control bits
Symbol
Text
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>[xxxx]</td>
<td>Original parameter of signal</td>
</tr>
<tr>
<td>[aaaa]</td>
<td>Signal comes from source diagram</td>
</tr>
<tr>
<td>[b]</td>
<td>Signal comes from signal path b</td>
</tr>
</tbody>
</table>

Sampling times
Symbol
Text
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>pxxx[yy]</td>
<td>(ZZZ.ZZ μs) Adjustable parameter with factory setting for selecting time slice.</td>
</tr>
<tr>
<td>[aaaa.b]</td>
<td>Default in p2048.</td>
</tr>
<tr>
<td>Can be sampling time</td>
<td>Time slice 4,000.00 μs.</td>
</tr>
</tbody>
</table>

Background
[1020.7] | There is no fixed sampling time for this function. Processing takes place in the background. |
[1020.7] | The cycle time depends on the Control Unit's computational load. |
[1020.7] | A static state is represented here. The sampling time data is not relevant. |

Explanations for parameters, binectors, connectors
Symbol
Parameter name
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>[aaaa.b]</td>
<td>Name of parameter (max. 18 characters)</td>
</tr>
<tr>
<td>[Unit]</td>
<td>[Unit]</td>
</tr>
<tr>
<td>xxxxx</td>
<td>&quot;y&quot; = Display parameter. Parameters of this type are read-only.</td>
</tr>
<tr>
<td>xxxxx</td>
<td>&quot;x&quot; stands for the parameter number</td>
</tr>
<tr>
<td>xxxxx</td>
<td>&quot;y&quot; specifies the valid index, while &quot;y-z&quot; specifies the applicable index range.</td>
</tr>
<tr>
<td>xxxxx</td>
<td>*.ww specifies the bit number (e.g. 0...15).</td>
</tr>
<tr>
<td>pxxx[yy]</td>
<td>&quot;y-z&quot; or &quot;yy&quot; stands for the parameter number</td>
</tr>
<tr>
<td>pxxx[yy]</td>
<td>&quot;y&quot; specifies the applicable index, while &quot;y-z&quot; specifies the applicable index range.</td>
</tr>
<tr>
<td>pxxx[yy]</td>
<td>*.ww specifies the bit number (e.g. 0...15).</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>from ... to</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>Value range.</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>Parameter number (xxxx) with index number [y] and bit number .ww.</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>Factory setting.</td>
</tr>
<tr>
<td>[xxxx]</td>
<td>Factory setting with default bit number.</td>
</tr>
<tr>
<td>[aaaa.b]</td>
<td>Diagram references for adjustable parameters that occur multiple times.</td>
</tr>
<tr>
<td>[aaaa.b]</td>
<td>Diagram block diagram, signal path</td>
</tr>
</tbody>
</table>

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8
DO: All Objects | fp_1020_96_VSD | Function diagram | 2013-05-14

Explanations for the function diagrams - Explanation of the symbols (part 1)
### 3.2 Explanations on the function diagrams

#### Symbol for switch

**Simple change-over switch:**
The factory setting for the switch position is displayed (in this case, the delivery state is switch position 1).

#### Symbol for monitoring

**Monitoring**
Positioning in sheet at bottom right.

#### Symbols for logic functions

1. **Logical inversion**
   - Logical inversion

2. **AND element with logical inversion of an input signal**
   - AND element with logical inversion

3. **R/S flip-flop**
   - R = Input for resetting
   - S = Input for setting
   - Q = Inverted output

4. **Exclusive OR/XOR**
   - Exclusive OR/XOR

#### Symbols for arithmetic and control functions

1. **Sign reversal**
   - Sign reversal
   - \( y = -x \)

2. **Absolute-value generator**
   - Absolute-value generator
   - \( y = \lvert x \rvert \)

3. **Divider**
   - Divider
   - \( y = \frac{x_1}{x_2} \)

4. **Comparator greater than 0**
   - Comparator greater than 0
   - Output \( y = \text{logical}\ "1" \) if output signal \( x > 0 \), i.e. if it is positive.

5. **Differentiator**
   - Differentiator
   - \( y = \frac{dx}{dt} \)

6. **Threshold switch 1/0**
   - Threshold switch 1/0
   - Outputs a logical "1" at output y if \( x < S \).

7. **Threshold 1/0 with hysteresis**
   - Threshold 1/0 with hysteresis
   - Outputs a logical "1" at output y if \( x > S \).

8. **Threshold 0/1 with hysteresis**
   - Threshold 0/1 with hysteresis
   - Outputs a logical "1" at output y if \( x < S \).
   - If \( x = S \), y returns to 0.

9. **Limiter**
   - Limiter
   - x is limited to the upper limit value LU and the lower limit value LL and is output at output y.
   - The binary signals MLU and MLL have the value "1" if upper or lower limiting is active.

10. **Sample & hold element**
    - Sample and hold element.
    - \( y = x \) if SET = 1
    - (no retentive memory during POWER OFF)
3 Function diagrams

3.2 Explanations on the function diagrams

**ON delay**

Digital signal x must retain the value "1" without interruption during time T, before output y switches to "1".

**PT1 element**

First-order delay element.

**Band-stop filter**

$pxxxx = \text{Resonant frequency}$

$pyyyy = \text{Filter quality}$

---

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td><strong>DO</strong>: All Objects</td>
<td><strong>SIEMENS</strong></td>
<td><strong>fp_1022_96_VSD</strong></td>
<td>Function diagram</td>
<td>- 1022 -</td>
<td></td>
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<tr>
<td><strong>Explanations for the function diagrams</strong> - Explanation of the symbols (part 3)</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Handing BICO technology

Binectors: 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 of r0723).

Connectors: Connectors are "analog signals" that can be freely interconnected (e.g. percentages, speeds, or torques). Connectors are simultaneously "CO" display parameters (CO = Connector Output).

Parameter assignment:
At the signal destination, the required binector/connector is selected using the appropriate parameters:
* "Bi:" parameters for binectors (Bi = Binector Input)
* "Ci:" parameters for connectors (Ci = Connector Input)

Example:
The main setpoint for the speed controller (Ci: p1070) should come from the motorized potentiometer output (CO: r050) and the "Jog" command (Bi: p1055) from digital input DI 0 (BO: r0722.0, terminal X122.1) on the CU320.

Parameterization steps:
1. p1055[0] = 722.0  Terminal X122.1 acts as "Jog bit 0".
2. p1070[0] = 1050  The motorized potentiometer output acts as the main setpoint for the speed controller.
3.2 Explanations on the function diagrams

Fig. 3-5  1032 – BICO administration

Explanation of the function diagrams - BICO management

1. DO: All Objects
2. Explanation of the function diagrams - BICO management
3. SIEMENS
4. 02.12.2014
5. Function diagram
6. FN-1032, 8th, VSD
7. SINAMICS DCM
8. - 1032 -

---

BICO management

---

BICO S src srch
p09484 (0)
3.3 Overviews

Function diagrams

<table>
<thead>
<tr>
<th>Function code</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1520</td>
<td>PROFIdrive</td>
<td>675</td>
</tr>
<tr>
<td>1580</td>
<td>Encoder evaluations (position, speed)</td>
<td>676</td>
</tr>
<tr>
<td>1720</td>
<td>Control</td>
<td>677</td>
</tr>
<tr>
<td>1721</td>
<td>Control functions activation/deactivation</td>
<td>678</td>
</tr>
<tr>
<td>1722</td>
<td>CUD left, CUD right</td>
<td>679</td>
</tr>
<tr>
<td>1781</td>
<td>Terminal Module 15 for SINAMICS (TM15DI/DO)</td>
<td>680</td>
</tr>
<tr>
<td>1840</td>
<td>Terminal Module 31 (TM31)</td>
<td>681</td>
</tr>
</tbody>
</table>
3 Function diagrams

3.3 Overviews

[2410] PROFIBUS address, diagnostics

IF1 P2D teleg 00922

Signal assignment

PZD1

Telegram 1, 3, 4, 20

PZD64

[2420] Standard telegrams

IF1 P2D teleg 00922

Signal assignment

PZD1

Telegram 220, 352, 390

PZD64

[2420] Manufacturer-specific telegrams

IF1 P2D teleg 00922

Signal assignment

PZD1

Telegram 99

PZD64

[2420] Freely assignable telegram

Interconnection of permanently assigned receive telegrams

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
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<td>...</td>
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<tr>
<td>...</td>
<td>...</td>
<td>...</td>
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</table>

Interconnection of permanently assigned send telegrams

<table>
<thead>
<tr>
<th>Signal</th>
<th>Description</th>
<th>Interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
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</tr>
<tr>
<td>...</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

Interconnection of free receive telegram

PZD 1

PZD 2

PZD 3

[2440]

Interconnection of free send telegram

PZD 1

PZD 2

PZD 3

[2470]

Send telegram

[2450]

Receive telegram

[2460]

[2483]

[2487]
3 Function diagrams

3.3 Overviews

Fig. 3-7  1580 – Encoder evaluations (position, speed)

- Encoder 1
  - Terminal X177
  - Encoder
  - Position sensing for encoder
    - p00418
    - Position counter
    - p00410.1
    - Fine resolution
      - p00400...
      - x²
      - Error
      - p00419
      - Reference mark position
  - Control word Gn_STW for encoder
    - 0
    - 1
    - ...
    - 15

- Encoder 2
  - Terminal X177
  - Encoder
  - Fine resolution
    - x²
    - Error
    - p00419
    - Reference mark position
  - Status word Gn_STW for encoder
    - 0
    - 1
    - ...
    - 15

- Fault/alarm messages
  - Enc_Gn_XIST1
    - r00482[n-1]
    - Actual position value 1
  - Enc_Gn_XIST2
    - r00483[n-1]
    - Actual position value 2

- Actual speed value sensing
  - n_act_measurement
  - Smoothing
  - n_act_unsmoothed [1/min]
    - 00081
  - n_load_smooth [1/min]
    - 00371
  - n_load [1/min]
    - 03770

- List Manual (LH8), 02/2015, 6RX1800-0ED76

- SINAMICS DCM
The most important control blocks can be activated/deactivated using parameter p50899.

- p50899[0...6] = 0: Block is deactivated
- p50899[0...6] = 1: Block is activated

Note 1:
This parameter is evaluated only once during a ramp-up, meaning that a change only becomes effective after a POWER ON or after a ramp-up with saved parameters (p0976 = 11).

Note 2:
The ability to deactivate control function blocks is intended for all users who wish to configure their own control system using DCC, e.g. because they are using the SINAMICS DC MASTER to operate something other than a motor (such as the excitation winding of a synchronous generator). Deactivating control function blocks that are not required frees up CPU time for the DCC function blocks.

<table>
<thead>
<tr>
<th>Index</th>
<th>Meaning</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Speed setpoint preprocessing (FP3105 - FP3135)</td>
<td>&lt;-1&gt;</td>
</tr>
<tr>
<td>1</td>
<td>Ramp-function generator (FP3150 - FP3155)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Speed control (FP6800 - FP6820)</td>
<td>&lt;-2&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Torque limitation/current limitation (FP6825 - FP6845, FP8040)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Armature current control (FP6852 - FP6855)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>EMF setpoint preprocessing and EMF control (FP6900)</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Field current control (FP6905 - FP6910)</td>
<td></td>
</tr>
</tbody>
</table>

<1> Exception: FP3130: The switch-on command and the intervention of r0807.0 and r03010.2 are always active.

<2> Exception: FP6810: The "Selection of the actual speed value" is always active.
### 3 Function diagrams

#### 3.3 Overviews

**Fig. 3-10 1722 – CUD left, CUD right**

- **Power Interface**
  - X109
  - Firing pulses, armature + field

- **CUD left**
  - DRIVE-CLIQ
  - PROFIBUS
  - Inputs/outputs
  - Parallel SS
  - DC regulation:
    - Setpoint preprocessing
    - Ramp-function generator
    - Speed control
    - Armature current regulation
    - Armature gating unit
    - EMF control
    - Field current regulation
    - Field gating unit

- **CUD right**
  - DRIVE-CLIQ
  - PROFIBUS
  - Inputs/outputs
  - Parallel SS
  - Application-specific functionality:
    - function diagrams created with DCC

**Option**

- G10 (standard CUD right) or
- G11 (advanced CUD right)

**NOTE:**

Operator control/monitoring and commissioning of the right-hand CUD cannot be carried out on the BOP20, only via STARTER!

For this purpose, both the left-hand CUD and right-hand CUD must be connected via PROFIBUS.

Each of the two CUDs is a separate PROFIBUS node.

---

**Do: DC_CTRL**

<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><strong>Overview - CUD left, CUD right</strong></td>
<td><strong>SIEMENS</strong></td>
<td>1722</td>
<td><strong>FP: 1722.96_VSD</strong></td>
<td>Function diagram</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
</tr>
</tbody>
</table>
Fig. 3-12 1840 – Terminal Module 31 (TM31)

<table>
<thead>
<tr>
<th>Function</th>
<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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</thead>
<tbody>
<tr>
<td>Overview</td>
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<td></td>
</tr>
</tbody>
</table>

**3 Function diagrams**

**3.3 Overviews**

- **Fig. 3-12**: Simulation for DI 0 ... DI 11
  - TM31 DI sim_mode
  - p04095_0...11
  - r04021...11
  - r04022.0...11
  - p04096_0...11
  - TM31 DI sim set
  - p04099 (4,000.00 μs)

- **Fig. 3-13**: Auxiliary voltage for the digital inputs

- **Fig. 3-14**: [9550] 4 digital inputs, isolated

- **Fig. 3-15**: [9552] 4 digital inputs, isolated

- **Fig. 3-16**: [9556] 2 digital outputs (relay)

- **Fig. 3-17**: [9557] 2 analog outputs

- **Fig. 3-18**: [9558] 2 analog inputs

**DO: TM31**

- **fp_1840_96_VSD**
- **Function diagram**
- **SINAMICS DCM**
### 3.4 CUD input/output terminals

**Function diagrams**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2050</td>
<td>Digital inputs (DI 0 ... DI 3)</td>
<td>683</td>
</tr>
<tr>
<td>2055</td>
<td>Digital outputs (DO 0 ... DO 3)</td>
<td>684</td>
</tr>
<tr>
<td>2060</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 4 ... DI/DO 5)</td>
<td>685</td>
</tr>
<tr>
<td>2065</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 6 ... DI/DO 7)</td>
<td>686</td>
</tr>
<tr>
<td>2070</td>
<td>E stop (emergency stop), relay output main contactor</td>
<td>687</td>
</tr>
<tr>
<td>2075</td>
<td>Analog inputs (AI 0 and XT1.103/104)</td>
<td>688</td>
</tr>
<tr>
<td>2080</td>
<td>Analog inputs (AI 1 ... AI 2)</td>
<td>689</td>
</tr>
<tr>
<td>2085</td>
<td>Analog inputs (AI 3 ... AI 4)</td>
<td>690</td>
</tr>
<tr>
<td>2090</td>
<td>Analog inputs (AI 5 ... AI 6)</td>
<td>691</td>
</tr>
<tr>
<td>2095</td>
<td>Analog outputs (AO 0 ... AO 1)</td>
<td>692</td>
</tr>
</tbody>
</table>
3 Function diagrams

3.4 CUD input/output terminals

Fig. 3-13 2050 – Digital inputs (DI 0 ... DI 3)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
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<tbody>
<tr>
<td>DO: DC_CTRL</td>
<td>CUD input/output terminals - Digital inputs (DI 0 ... DI 3)</td>
<td>SIEMENS</td>
<td>fp_2050_96_VSD</td>
<td>Function diagram</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
</tr>
</tbody>
</table>

CUD DI simul setp p50766.0 (0)
CUD DI simul setp p50766.1 (0)
CUD DI simul setp p50766.2 (0)
CUD DI simul setp p50766.3 (0)

X177.9 P24_S
X177.11 DI 0
X177.12 DI 1
X177.13 DI 2
X177.14 DI 3

/ OFF1
Enable
3.4 CUD input/output terminals

Fig. 3-14 2055 – Digital outputs (DO 0 ... DO 3)

- For log. "1": Output transistor is conductive
- If p50774=r51579.0 is set, then this output is updated every 250 μs

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>DO: DC_CTRL</td>
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</tbody>
</table>

CUD input/output terminals - Digital outputs (DO 0 ... DO 3)
3 Function diagrams

3.4 CUD input/output terminals

DO: DC-CTRL
CUD input/output terminals - Digital inputs/outputs bidirectional (DI/DO 4 ... DI/DO 5)

Fig. 3-15 2060 – Digital inputs/outputs, bidirectional (DI/DO 4 ... DI/DO 5)

The wiring represented as a dashed line applies during use as a digital output (ps07089g = 1)

<1>

Diagram showing connections and wiring configurations for CUD input/output terminals. The diagram includes labels for various terminals and connections, indicating the flow of signals or power within the system.
Fig. 3-16  
2065 – Digital inputs/outputs, bidirectional (DI/DO 6 ... DI/DO 7)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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</thead>
<tbody>
<tr>
<td>DO: DC_CTRL</td>
<td>SIEMENS fp_2065_96_VSD</td>
<td>Function diagram</td>
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<td></td>
</tr>
<tr>
<td>CUD input/output terminals - Digital inputs/outputs bidirectional (DI/DO 6 ... DI/DO 7)</td>
<td>2013-05-14 v 1.4.1 SINAMICS DCM</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**3 Function diagrams**

3.4 CUD input/output terminals

<1> The wiring represented as a dashed line applies during use as a digital output (p50789[x] = 1)
3.4 CUD input/output terminals

Fig. 3-17 2070 - E stop (emergency stop), relay output main contactor

- Trigger E-Stop
- E-Stop coil
- E-Stop contact NC contact
- E-Stop response
- Intermediate pulse inhibit with E-Stop
- Power ON
- Line cont. ON
- Power Interface

Diagram showing the connection points for the E-stop function.
### 3.4 CUD input/output terminals

#### Function diagrams

**Fig. 3-18** 2075 – Analog inputs (AI 0 and XT1.103/104)

<table>
<thead>
<tr>
<th>U</th>
<th>I</th>
<th>r52xxx</th>
<th>Signal type</th>
<th>Normalizing</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10V...+10V</td>
<td>---</td>
<td>-100%...+100%</td>
<td>0</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>...</td>
<td>-20...±20mA</td>
<td>-100%...+100%</td>
<td>1</td>
<td>100%</td>
<td>0%</td>
</tr>
<tr>
<td>...</td>
<td>4...±20mA</td>
<td>0...+100%</td>
<td>2</td>
<td>100%</td>
<td>0%</td>
</tr>
</tbody>
</table>

- **CUD Al 0 sim sel**
  - p50709 (0)
- **CUD Al 0 sim setp**
  - -130.0...130.0 [%] p50707 (0)
- **CUD Al 0 sim offp**
  - -200.0...200.0 [%] p50702 (0)
- **CUD Al 0 offp**
  - -1000.0...1000.0 [%] p50701 (0)
- **Al m_actV sim sel**
  - -130.0...130.0 [%] p50747 (0)
- **Al m_actV sim setp**
  - -200.0...200.0 [%] p50742 (0)
- **Al m_actV sim offp**
  - -1000.0...1000.0 [%] p50741 (0)

**Power interface**

- **XT1.103**
  - Analog select input main actual value
- **XT1.104**

**DO: DC_CTRL**

- **CUD input/output terminals - Analog inputs (AI 0 and XT1.103/104)**

---

**Notes:**

- Permissible input voltage: -p50741 to +p50741
- Absolute maximum: -270 V to +270 V
**DIAGRAM INFORMATION**

- **Diagram Title:** CUD input/output terminals - Analog inputs (AI 1 ... AI 2)
- **Diagram Description:**
  - CUD AI 1 type
  - CUD AI 1 sim sel
  - CUD AI 1 sim setp
  - CUD AI 1 scal
  - CUD AI 1 sig proc
  - CUD AI 1 inv
  - CUD AI 1 ena sig s

**Table Information**

<table>
<thead>
<tr>
<th>U</th>
<th>I</th>
<th>Signal type</th>
<th>Normalizing</th>
<th>Offset</th>
</tr>
</thead>
<tbody>
<tr>
<td>-10V ... +10V</td>
<td>---</td>
<td>-100% ... +100%</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td>- -</td>
<td>-20mA ... +20mA</td>
<td>-100% ... +100%</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>- -</td>
<td>4mA ... 20mA</td>
<td>0 ... +100%</td>
<td>2</td>
<td>100%</td>
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</tbody>
</table>

**Additional Details**

- **规范:** SINAMICS DCM
- **手册:** List Manual (LH8), 02/2015, 6RX1800-0ED76
- **日期:** 2013-05-14
- **版本:** v 1.4.1
3 Function diagrams

3.4 CUD input/output terminals

Fig. 3-20  2085 - Analog inputs (AI 3 ... AI 4)
3 Function diagrams

3.4 CUD input/output terminals

Fig. 3-21 2090 – Analog inputs (AI 5 ... AI 6)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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<tr>
<td><strong>DO: DC_CTRL</strong></td>
<td><strong>CUD input/output terminals - Analog inputs (AI 5 ... AI 6)</strong></td>
<td></td>
<td></td>
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</table>

**Siemens** fp_2090_98_VSD  Function diagram  2013-05-14 v 1.4.1 SINAMICS DCM - 2090 -
3.4 CUD input/output terminals

**Fig. 3-22** 2095 – Analog outputs (AO 0 ... AO 1)

- CUD AO 0 sig proc 0: p50751 (0)
- CUD AO 0 sig s: p50750 (0)
- CUD AO 0 T: p50752 (0)
- CUD AO 0 T 0...10000 [ms]: p50753 (10.00)
- CUD AO 0 scalar -200.00...200.00 [V]: p50754 (0.00)
- CUD AO 0 offset -10.00...10.00 [V]: p50755 (0.00)

\[ y [V] = \frac{x}{100} \times p50753 \]

\[ y \]

**Output Diagram**

- Uout [V] = \( \frac{p50752}{100} \times p50753 + p50754 \)
- Uout [V] = \( \frac{p50752}{100} \times p50758 + p50759 \)

- DO: DC_CTRL
- CUD input/output terminals - Analog outputs (AO 0 ... AO 1)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
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</table>
3.5 Control Unit communication

Function diagrams

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>Page</th>
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</thead>
<tbody>
<tr>
<td>2197</td>
<td>SINAMICS Link overview ((r0108.31 = 1, p8835 = 3))</td>
<td>694</td>
</tr>
<tr>
<td>2198</td>
<td>SINAMICS Link configuration ((r0108.31 = 1, p8835 = 3))</td>
<td>695</td>
</tr>
<tr>
<td>2199</td>
<td>SINAMICS Link receive data ((r0108.31 = 1, p8835 = 3))</td>
<td>696</td>
</tr>
<tr>
<td>2200</td>
<td>SINAMICS Link send data ((r0108.31 = 1, p8835 = 3))</td>
<td>697</td>
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</table>
3 Function diagrams

3.5 Control Unit communication

Fig. 3-24 2198 – SINAMICS Link configuration (r0108.31 = 1, p8835 = 3)

<table>
<thead>
<tr>
<th>Project</th>
<th>Nodes, maximum (0 = deactivated)</th>
<th>PZD, maximum</th>
<th>Bus cycle (min. / max. / factory setting)</th>
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</thead>
<tbody>
<tr>
<td>64</td>
<td>64 (0, 1 … 64)</td>
<td>16</td>
<td>1000/2000/2000 μs</td>
</tr>
<tr>
<td>16</td>
<td>16 (0, 1 … 16)</td>
<td>16</td>
<td>500/500/500 μs</td>
</tr>
<tr>
<td>12</td>
<td>12 (0, 1 … 12)</td>
<td>24</td>
<td>500/500/500 μs</td>
</tr>
<tr>
<td>8</td>
<td>8 (0, 1 … 8)</td>
<td>32</td>
<td>500/500/500 μs</td>
</tr>
</tbody>
</table>

– A01902.4 "Time of the actual value acquisition Ti is not a multiple integer of the current controller sampling time"
– A50002 “COMM BOARD alarm 2"
– A50003 “COMM BOARD alarm 3"
– A50004 “COMM BOARD alarm 4"
– A50005 “COMM BOARD alarm 5"
– A50006 “COMM BOARD alarm 6"
– A50007 “COMM BOARD alarm 7"
– A50008 “COMM BOARD alarm 8"
– A08531 "SINAMICS Link POWER ON required"

<1> The configuration parameters must be set the same for all nodes (exception: p8836, p8839[0,1]).
<2> A change only takes effect after POWER ON.
<3> The following applies for the node address: Address 1 must be present and gaps are not permitted.
<1> A pair of values p8870[index], p8872[index] must only be used once in a device.

<2> A change takes effect with p8842 = 1.

Whereby, the configuration data p8841[0..239] is also transferred to the CBE20. p8842 = 0 is then set automatically.

A change can also take effect via a warm restart, project download or POWER ON

<3> The number of process data n (PZD) depends on the drive object.

---

**Function diagrams**

3.5 Control Unit communication

---

**Control Unit communication - SINAMICS Link receive data (r0108.31 = 1, p8835 = 3)**

---

**Table:**

<table>
<thead>
<tr>
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<th>2</th>
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<td>Function diagram</td>
<td>- 2199 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Diagram:**

Fig. 3-25 2199 – SINAMICS Link receive data (r0108.31 = 1, p8835 = 3)
Fig. 3-26 2200 – SINAMICS Link send data (r0108.31 = 1, p8835 = 3)

<table>
<thead>
<tr>
<th>1</th>
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<td>fp_2200_96_VSD</td>
<td>Function diagram</td>
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SIEMENS
28.11.2014 v 1.4.1 SINAMICS DCM
## 3.6 PROFIdrive

### Function diagrams

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<th>Diagram</th>
<th>Description</th>
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</thead>
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<td>2410</td>
<td>PROFIBUS (PB) / PROFINET (PN) / USS, addresses and diagnostics</td>
<td>699</td>
</tr>
<tr>
<td>2420</td>
<td>Telegrams and process data (PZD)</td>
<td>700</td>
</tr>
<tr>
<td>2425</td>
<td>STW1_BM control word, metal industry interconnection</td>
<td>701</td>
</tr>
<tr>
<td>2426</td>
<td>STW2_BM control word, metal industry interconnection</td>
<td>702</td>
</tr>
<tr>
<td>2428</td>
<td>ZSW1_BM status word, metal industry interconnection</td>
<td>703</td>
</tr>
<tr>
<td>2429</td>
<td>ZSW2_BM status word, metal industry interconnection</td>
<td>704</td>
</tr>
<tr>
<td>2440</td>
<td>PZD receive signals interconnection</td>
<td>705</td>
</tr>
<tr>
<td>2442</td>
<td>STW1 control word interconnection</td>
<td>706</td>
</tr>
<tr>
<td>2444</td>
<td>STW2 control word interconnection</td>
<td>707</td>
</tr>
<tr>
<td>2450</td>
<td>PZD send signals interconnection</td>
<td>708</td>
</tr>
<tr>
<td>2452</td>
<td>ZSW1 status word interconnection</td>
<td>709</td>
</tr>
<tr>
<td>2454</td>
<td>ZSW2 status word interconnection</td>
<td>710</td>
</tr>
<tr>
<td>2460</td>
<td>IF1 receive telegram, free interconnection via BICO (p0922 = 999)</td>
<td>711</td>
</tr>
<tr>
<td>2470</td>
<td>IF1 send telegram, free interconnection via BICO (p0922 = 999)</td>
<td>712</td>
</tr>
<tr>
<td>2472</td>
<td>IF1 status words, free interconnection</td>
<td>713</td>
</tr>
<tr>
<td>2481</td>
<td>IF1 receive telegram, free interconnection via BICO (p0922 = 999)</td>
<td>714</td>
</tr>
<tr>
<td>2483</td>
<td>IF1 send telegram, free interconnection via BICO (p0922 = 999)</td>
<td>715</td>
</tr>
<tr>
<td>2485</td>
<td>IF2 receive telegram, free interconnection via BICO (p0922 = 999)</td>
<td>716</td>
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<tr>
<td>2487</td>
<td>IF2 send telegram, free interconnection via BICO (p0922 = 999)</td>
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</tr>
<tr>
<td>2489</td>
<td>IF2 status words, free interconnection</td>
<td>718</td>
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<tr>
<td>2495</td>
<td>CU_STW1 control word 1, Control Unit interconnection</td>
<td>719</td>
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<tr>
<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>721</td>
</tr>
<tr>
<td>2498</td>
<td>E_DIGITAL interconnection</td>
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</table>
### Function diagrams

#### 3.6 PROFIdrive

**SINAMICS DCM 700**

*List Manual (LH8), 02/2015, 6RX1800-0ED76*

#### PROFIdrive sampling time

![Diagram](image)

**Fig. 3-28**

<table>
<thead>
<tr>
<th>Telegram</th>
<th>1</th>
<th>1, 4</th>
<th>1, 4</th>
<th>20</th>
<th>220</th>
<th>352</th>
<th>390</th>
<th>999</th>
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</thead>
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<tr>
<td>PZD 1</td>
<td>STW1</td>
<td>ZSW1</td>
<td>STW1</td>
<td>ZSW1</td>
<td>STW1</td>
<td>ZSW1</td>
<td>STW1</td>
<td>ZSW1</td>
</tr>
<tr>
<td>PZD 2</td>
<td>NSOLL_A</td>
<td>MST_A</td>
<td>NSOLL_B</td>
<td>MST_B</td>
<td>NSOLL_A</td>
<td>MST_A</td>
<td>NSOLL_B</td>
<td>MST_B</td>
</tr>
<tr>
<td>PZD 3</td>
<td>STW2</td>
<td>ZSW2</td>
<td>STW2</td>
<td>ZSW2</td>
<td>STW2</td>
<td>ZSW2</td>
<td>STW1</td>
<td>ZSW1</td>
</tr>
<tr>
<td>PZD 4</td>
<td>G1_STW</td>
<td>G1_ZSW</td>
<td>G1_STW</td>
<td>G1_ZSW</td>
<td>G1_STW</td>
<td>G1_ZSW</td>
<td>STW1</td>
<td>ZSW1</td>
</tr>
<tr>
<td>PZD 5</td>
<td>G1_XIST1</td>
<td>G1_XIST1</td>
<td>user &lt;7&gt;</td>
<td>user &lt;7&gt;</td>
<td>user &lt;7&gt;</td>
<td>user &lt;7&gt;</td>
<td>ZSW2</td>
<td>ZSW2</td>
</tr>
<tr>
<td>PZD 6</td>
<td>G1_XIST1</td>
<td>G1_XIST1</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW3</td>
<td>ZSW3</td>
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<tr>
<td>PZD 7</td>
<td>G1_XIST1</td>
<td>G1_XIST1</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW4</td>
<td>ZSW4</td>
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<tr>
<td>PZD 8</td>
<td>G1_XIST1</td>
<td>G1_XIST1</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW5</td>
<td>ZSW5</td>
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<tr>
<td>PZD 9</td>
<td>G1_XIST1</td>
<td>G1_XIST1</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW6</td>
<td>ZSW6</td>
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<tr>
<td>PZD 10</td>
<td>G2_STW</td>
<td>G2_ZSW</td>
<td>G2_STW</td>
<td>G2_ZSW</td>
<td>G2_STW</td>
<td>G2_ZSW</td>
<td>STW1</td>
<td>ZSW1</td>
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<td>PZD 11</td>
<td>G2_XIST1</td>
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<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW2</td>
<td>ZSW2</td>
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<tr>
<td>PZD 12</td>
<td>G2_XIST1</td>
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<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW3</td>
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<td>PZD 13</td>
<td>G2_XIST1</td>
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<td>user &lt;5&gt;</td>
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<td>ZSW4</td>
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<td>PZD 14</td>
<td>G2_XIST1</td>
<td>G2_XIST1</td>
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<td>user &lt;5&gt;</td>
<td>ZSW5</td>
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<td>PZD 15</td>
<td>G2_XIST1</td>
<td>G2_XIST1</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>user &lt;5&gt;</td>
<td>ZSW6</td>
<td>ZSW6</td>
</tr>
</tbody>
</table>

**<1>** When changing P0922 = 999 to a different value, the telegram assignment is made automatically in accordance with [2420]. When changing P0922 not 999 to 999, the "old" telegram assignment as per [2420] remains unchanged.

**<2>** Only telegrams 390 and 999 are supported on DO CU_DC.

**<3>** To comply with the PROFIdrive profile, PZD1 must be used as control word 1 (STW1) or status word 1 (ZSW1). If STW1 according to the PROFIdrive profile is not transferred with PZD1, p2037 = 2 must be set.

**<4>** The maximum PZD number depends on the drive object type.

**<5>** Can be freely interconnected (default: 0).

**<6>** Default not inhibited

**<7>** Can be freely interconnected (default: MESS_NAMUR)

**<8>** Telegram 390 is only supported on DO CU_DC.

---

**DO: DC_CTRL, CU_DC**

**PROFIdrive - Telegrams and process data (PZD)**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
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<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
<td>- 2420 -</td>
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</table>
### Signal destinations for STW1_BM for telegram 220

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
</table>
| STW1.0 | 0 = OFF (OFF 1)  
1 = ON | p0840[0] = r2090.0 | 2580.1 | - |
| STW1.1 | 0 = OFF2 (immediate pulse suppression and switching on inhibited)  
1 = No OFF2 (enable possible) | p0844[0] = r2090.0 | 2580.1 | - |
| STW1.2 | 0 = OFF3 (braking along the OFF3 ramp, then pulse suppression and switching on inhibited)  
1 = No OFF3 (enable possible) | p0848[0] = r2090.0 | 2580.1 | - |
| STW1.3 | 0 = Inhibit operation  
1 = Enable operation | p2816[0] = r2090.3 | 2655.6 | - |
| STW1.4 | 0 = Set ramp-function generator zero  
1 = Enable ramp-function generator | p1140[0] = r2090.4 | 2580.3 | - |
| STW1.5 | 0 = Freeze ramp-function generator  
1 = Continue ramp-function generator | p1141[0] = r2090.5 | 2580.3 | - |
| STW1.6 | 0 = Speed setpoint = 0  
1 = Speed setpoint enable | p1142[0] = r2090.6 | 2580.3 | - |
| STW1.7 | 0 = Acknowledge fault  
1 = Acknowledge fault | p2103[0] = r2090.7 | 2546.1 | - |
| STW1.8 | Reserved | - | - | - |
| STW1.9 | Reserved | - | - | - |
| STW1.10 | 1 = Control via PLC | <1> | p0854[0] = r2090.10 | 2580.3 | - |
| STW1.11 | Reserved | - | - | - |
| STW1.12 | Reserved | <2> | - | - | - |
| STW1.13 | Reserved | <2> | - | - | - |
| STW1.14 | Reserved | <2> | - | - | - |
| STW1.15 | Reserved | <2> | - | - | - |

<1> STW1.10 must be set in order for the drive object to accept the process data (PZD).
<2> Interconnection is not inhibited.
### Signal destinations for STW2_BM for telegram 220

<table>
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<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</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>[8560.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.1</td>
<td>Reserved; bit must always be set to 0.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.2</td>
<td>Command data set selection DDS bit 0</td>
<td>p0820[0] = r2093.2</td>
<td>[8565.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.3</td>
<td>Command data set selection DDS bit 1</td>
<td>p0821[0] = r2093.3</td>
<td>[8565.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Reserved; bit must always be set to 0.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>STW2.5</td>
<td>1 = Bridge ramp-function generator</td>
<td>p50641[0] = r2093.5</td>
<td>[3152.2]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.6</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.7</td>
<td>1 = Speed controller integration value set</td>
<td>p50695[0] = r2093.7</td>
<td>[6815.1]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.8</td>
<td>1 = Enable droop</td>
<td>p50684[0] = r2093.8</td>
<td>[6805.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.9</td>
<td>1 = Enable speed controller</td>
<td>p0856[0] = r2093.9</td>
<td>[2580.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.10</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.11</td>
<td>0 = Speed-controlled operation</td>
<td>p50697[0] = r2093.11</td>
<td>[6830.2]</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>1 = Torque-controlled operation</td>
<td></td>
<td></td>
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<tr>
<td>STW2.12</td>
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<tr>
<td>STW2.13</td>
<td>Reserved</td>
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</tr>
<tr>
<td>STW2.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.15</td>
<td>Controller sign-of-life toggle bit</td>
<td>p2081[15] = r2093.15</td>
<td>[2472.1]</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> Interconnection is not inhibited.
### Signal destinations for ZSW1_BM for telegram 220

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready to switch on</td>
<td>p2080[0] = r0899.0</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready</td>
<td>p2080[1] = r0899.1</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled</td>
<td>p2080[2] = r2811.0</td>
<td>(2655.8)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault effective</td>
<td>p2080[3] = r2139.3</td>
<td>(2548.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>0 = Coasting down active (OFF2)</td>
<td>p2080[4] = r0899.4</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>0 = Quick stop active (OFF3)</td>
<td>p2080[5] = r0899.5</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm effective</td>
<td>p2080[7] = r2139.7</td>
<td>(2548.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance</td>
<td>p2080[8] = r2197.7</td>
<td>(2534.6)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control requested</td>
<td>p2080[8] = r0899.9</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = n comparison value reached or exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>(2537.6)</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = Torque limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>-</td>
<td>✓</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Open holding brake</td>
<td>p2080[12] = r0899.12</td>
<td>(2585.7)</td>
<td>-</td>
</tr>
<tr>
<td>Reserved</td>
<td>&lt;3&gt; Interconnection is not inhibited.</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>Reserved</td>
<td>&lt;3&gt;</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> ZSW1_BM is formed via binector-connector converter (BI: p2080[0]...15), inversion: p2088[0]...p2088[0].15.
<2> The drive object is ready for acceptance.
<3> Interconnection is not inhibited.

<table>
<thead>
<tr>
<th>DO: DC_CTRL</th>
<th>PROFIdrive - ZSW1_BM status word sector metal interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>SIEMENS</td>
<td>fp_2428_96_VSD</td>
</tr>
<tr>
<td>PROFIdrive</td>
<td>ZSW1_BM status word sector metal interconnection</td>
</tr>
</tbody>
</table>
### Signal destinations for ZSW2_BM for telegram 220

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW2.0</td>
<td>Reserved</td>
<td>&lt;1&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.1</td>
<td>Reserved</td>
<td>&lt;1&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.2</td>
<td>Reserved</td>
<td>&lt;1&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.3</td>
<td>Reserved</td>
<td>&lt;1&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.4</td>
<td>Reserved</td>
<td>&lt;1&gt;</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.5</td>
<td>1 = Alarm class bit 0</td>
<td>p208[5] = r2139.11</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.6</td>
<td>1 = Alarm class bit 0</td>
<td>p208[6] = r2139.12</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.7</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.8</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.9</td>
<td>1 = Speed setpoint limited</td>
<td>p208[9] = r1407.11</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.10</td>
<td>1 = Upper torque limit reached</td>
<td>p208[10] = r1407.8</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.11</td>
<td>1 = Lower torque limit reached</td>
<td>p208[11] = r1407.9</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.12</td>
<td>1 = Encoderless operation because of fault</td>
<td>p208[12] = r1407.13</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.13</td>
<td>Reserved</td>
<td>p208[13] = r53110.1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.14</td>
<td>Reserved</td>
<td>p208[14] = r53110.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.15</td>
<td>Controller sign-of-life toggle bit</td>
<td>p208[15] = r2093.15</td>
<td>[2460.6]</td>
<td>-</td>
</tr>
</tbody>
</table>

<1> Interconnection is not inhibited.

### Table for Signal destinations for ZSW2_BM for telegram 220

<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><strong>DO: DC_CTRL</strong></td>
<td><strong>SIEMENS</strong></td>
<td>fp_2429_98_VSD</td>
<td>Function diagram</td>
<td>-</td>
<td>2429</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PROFIdrive - ZSW2_BM status word sector metal interconnection</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Signal sinks 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>Normalizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>STW1</td>
<td>Control word 1 for telegram 1, 3, 4, 20, 352</td>
<td>1</td>
<td>(bit by bit)</td>
<td>[2442]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>STW2</td>
<td>Control word 2 for telegram 3, 4</td>
<td>3</td>
<td>(bit by bit)</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</td>
<td>[3113.2]</td>
<td>I16</td>
<td>4000 hex 100%</td>
</tr>
<tr>
<td>NSOLL_B</td>
<td>Speed setpoint B (32-bit)</td>
<td>7</td>
<td>p50621</td>
<td>[6812.2]</td>
<td>I32</td>
<td>4000 0000 hex 100%</td>
</tr>
<tr>
<td>G1_STW</td>
<td>Encoder 1 control word</td>
<td>9</td>
<td>p0480[0]</td>
<td>[4720.1]</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>[4720.1]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL</td>
<td>Digital output (16-bit)</td>
<td>22</td>
<td>(bit by bit)</td>
<td>[2497]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>M_LIM</td>
<td>Torque limit</td>
<td>310</td>
<td>p50605(0)</td>
<td>[6852.2]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>M_ADD</td>
<td>Additional torque</td>
<td>311</td>
<td>p50619</td>
<td>[6820.4]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>STW1_BM</td>
<td>Control word 1, variant for BM</td>
<td>322</td>
<td>(bit by bit)</td>
<td>[2425]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>STW2_BM</td>
<td>Control word 2, variant for BM</td>
<td>324</td>
<td>(bit by bit)</td>
<td>[2426]</td>
<td>U16</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1</td>
<td>Control word 1 for Control Unit</td>
<td>500</td>
<td>(bit by bit)</td>
<td>[2495]</td>
<td>U16</td>
<td>-</td>
</tr>
</tbody>
</table>

- **<1>** Data type in acc. with PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32.
- **<2>** When selecting a standard telegram or a manufacturer-specific telegram (telegram number <> 992) via p0922, these interconnection parameters of command data set CDS0 are set automatically.
### Signal destinations for STW1 for telegrams 1, 3, 4, 20, 352

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>[Function diagram] Internal control word</th>
<th>Inverted</th>
</tr>
</thead>
</table>
| STW1.0   | $\bar{f}$ = ON (pulses can be enabled)  
0 = OFF-1 (braking with ramp-function generator, then pulse suppression and ready to switch on) | p0840[0] = r2090.0        | 2580.1                                 | -        |
| STW1.1   | 1 = OC (enable possible)  
0 = OFF-2 (immediate pulse suppression and switching on inhibited)       | p0844[0] = r2090.1        | 2580.1                                 | -        |
| STW1.2   | 1 = OC (enable possible)  
0 = OFF-3 (braking along the OFF3 ramp, then pulse suppression and switching on inhibited) | p0848[0] = r2090.2        | 2580.1                                 | -        |
| STW1.3   | 1 = Enable operation (pulses can be enabled)  
0 = Inhibit operation (suppress pulses)                                | p0852[0] = r2090.3        | 2580.1                                 | -        |
| STW1.4   | 1 = Enable ramp-function generator  
0 = Inhibit ramp-function generator (set ramp-function generator output to zero) | p1140[0] = r2090.4        | 2580.3                                 | -        |
| STW1.5   | 1 = Start ramp-function generator  
0 = Stop ramp-function generator (freeze ramp-function generator output) | p1141[0] = r2090.5        | 2580.3                                 | -        |
| STW1.6   | 1 = Enable speed setpoint  
0 = Inhibit speed setpoint (set ramp-function generator input to zero) | p1142[0] = r2090.6        | 2580.3                                 | -        |
| STW1.7   | $\bar{f}$ = Acknowledge fault                                          | p2103[0] = r2090.7        | 2546.1                                 | -        |
| STW1.8   | Reserved                                                               |                           |                                        |          |
| STW1.9   | Reserved                                                               |                           |                                        |          |
| STW1.10  | 1 = Control via PLC                                                   | p0854[0] = r2090.10       | 2580.3                                 | -        |
| STW1.11  | 1 = setpoint inversion                                                | p1113[0] = r2090.11       | 3113.6                                 |          |
| STW1.12  | Reserved                                                               |                           |                                        |          |
| STW1.13  | 1 = Motorized potentiometer, higher                                    | p1035[0] = r2090.13       | 3110.1                                 | -        |
| STW1.14  | 1 = Motorized potentiometer, lower                                     | p1036[0] = r2090.14       | 3110.1                                 | -        |
| STW1.15  | 1 = Command data set selection CDS bit 0                              | p0810[0] = r2090.15       | 8560.3                                 | -        |

<1> Only for telegram 20

<2> STW1.10 must be set in order for the drive object to accept the process data (PZD).

<3> Only for telegram 1, 3, 4 and 352

<4> OC = Operating condition

<table>
<thead>
<tr>
<th>DO: DC_CTRL</th>
<th>PROFdrive - STW1 control word interconnection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIEMENS</td>
<td>fp_2442_96_VSD Function diagram</td>
</tr>
<tr>
<td>SINAMICS DCM</td>
<td>2013-05-14 v 1.4.1</td>
</tr>
</tbody>
</table>
## Signal destinations for STW2 for telegrams 3, 4

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</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>[8565.3]</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>[8565.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.2</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.3</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.5</td>
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</tr>
<tr>
<td>STW2.6</td>
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<tr>
<td>STW2.7</td>
<td>Reserved</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.8</td>
<td>Reserved</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.9</td>
<td>Reserved</td>
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</tr>
<tr>
<td>STW2.10</td>
<td>Reserved</td>
<td>-</td>
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</tr>
<tr>
<td>STW2.11</td>
<td>Reserved</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>
</tr>
<tr>
<td>STW2.13</td>
<td>Master sign-of-life bit 1</td>
<td>p2045 = r2050[3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.14</td>
<td>Master sign-of-life bit 2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>STW2.15</td>
<td>Master sign-of-life bit 3</td>
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</table>

### Table: Signal destinations for STW2 for telegrams 3, 4

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</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>[8565.3]</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>[8565.3]</td>
<td>-</td>
</tr>
<tr>
<td>STW2.2</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.3</td>
<td>Reserved</td>
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<td>-</td>
</tr>
<tr>
<td>STW2.4</td>
<td>Reserved</td>
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</tr>
<tr>
<td>STW2.5</td>
<td>Reserved</td>
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<td>-</td>
</tr>
<tr>
<td>STW2.6</td>
<td>Reserved</td>
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<td>-</td>
</tr>
<tr>
<td>STW2.7</td>
<td>Reserved</td>
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<td>-</td>
</tr>
<tr>
<td>STW2.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.10</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>STW2.11</td>
<td>Reserved</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>
</tr>
<tr>
<td>STW2.13</td>
<td>Master sign-of-life bit 1</td>
<td>p2045 = r2050[3]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STW2.14</td>
<td>Master sign-of-life bit 2</td>
<td></td>
<td></td>
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<tr>
<td>STW2.15</td>
<td>Master sign-of-life bit 3</td>
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</tbody>
</table>
### 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>Normalizing</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1</td>
<td>Status word 1</td>
<td>2</td>
<td>r2089[0]</td>
<td>[2452]</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>ZSW2</td>
<td>Status word 2</td>
<td>4</td>
<td>r2089[1]</td>
<td>[2454]</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>NIST_A</td>
<td>Actual speed value A (16-bit)</td>
<td>6</td>
<td>r0063[0]</td>
<td>6810.4</td>
<td>I16</td>
<td>4000 hex (= 100% = p2000)</td>
</tr>
<tr>
<td>G1.ZSW</td>
<td>Encoder 1 status word</td>
<td>10</td>
<td>r0481[0]</td>
<td>4730.5</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>G1.XIST1</td>
<td>Encoder 1 actual position value 1</td>
<td>11</td>
<td>r0482[0]</td>
<td>4704.8</td>
<td>U32</td>
<td>.</td>
</tr>
<tr>
<td>G1.XIST2</td>
<td>Encoder 1 actual position value 2</td>
<td>12</td>
<td>r0483[0]</td>
<td>4704.8</td>
<td>U32</td>
<td>.</td>
</tr>
<tr>
<td>G2.ZSW</td>
<td>Encoder 2 status word</td>
<td>14</td>
<td>r048[1]</td>
<td>4730.5</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>G2.XIST1</td>
<td>Encoder 2 actual position value 1</td>
<td>15</td>
<td>r0482[1]</td>
<td>4704.8</td>
<td>U32</td>
<td>.</td>
</tr>
<tr>
<td>G2.XIST2</td>
<td>Encoder 2 actual position value 2</td>
<td>16</td>
<td>r0483[1]</td>
<td>4704.8</td>
<td>U32</td>
<td>.</td>
</tr>
<tr>
<td>IAIST.GLATT</td>
<td>Absolute actual current value smoothed</td>
<td>51</td>
<td>r0027</td>
<td>6851.6</td>
<td>I16</td>
<td>4000 hex (= 100% = p2002)</td>
</tr>
<tr>
<td>MIST.GLATT</td>
<td>Actual torque value smoothed</td>
<td>53</td>
<td>r0080</td>
<td>6851.7</td>
<td>I16</td>
<td>4000 hex (= 100% = p2003)</td>
</tr>
<tr>
<td>PIST.GLATT</td>
<td>Active power smoothed</td>
<td>54</td>
<td>r0082[1]</td>
<td>-</td>
<td>I16</td>
<td>4000 hex (= 100% = p2004)</td>
</tr>
<tr>
<td>NIST.A.GLATT</td>
<td>Actual speed value smoothed</td>
<td>57</td>
<td>r0063[1]</td>
<td>6810.5</td>
<td>I16</td>
<td>4000 hex (= 100% = p2000)</td>
</tr>
<tr>
<td>MELD.NAMUR</td>
<td>VIK-NAMUR message bit bar</td>
<td>58</td>
<td>r3113</td>
<td>-</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>FAULT.CODE</td>
<td>Fault code</td>
<td>301</td>
<td>r2131</td>
<td>8060.3</td>
<td>U16</td>
<td>.</td>
</tr>
<tr>
<td>WARN.CODE</td>
<td>Alarm code</td>
<td>303</td>
<td>r2132</td>
<td>8065.3</td>
<td>U16</td>
<td>.</td>
</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>
<td>.</td>
</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>
<td>.</td>
</tr>
<tr>
<td>CU.ZSW1</td>
<td>Status word 1 for Control Unit</td>
<td>501</td>
<td>r209[1]</td>
<td>2498</td>
<td>U16</td>
<td>.</td>
</tr>
</tbody>
</table>

<1> Data type according to PROFIdrive profile: I16 = Integer16, I32 = Integer32, U16 = Unsigned16, U32 = Unsigned32

<2> When selecting a standard telegram or a manufacturer-specific telegram (telegram number => 999) via p0922, these interconnection parameters of command data set DDS are set automatically.

<3> Value refers to device data. I.e. 100% corresponds to p2003.

<4> Electric power output of the SINAMICS DCM

### PROFIdrive sampling time

<table>
<thead>
<tr>
<th>PROFIdrive sampling time</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1020.7]</td>
</tr>
</tbody>
</table>

### Signal diagram

**Signal Interconnection**

- **Signal Sources:**
  - ZSW1, ZSW2, NIST_A, G1.ZSW, G1.XIST1, G1.XIST2, G2.ZSW, G2.XIST1, G2.XIST2, E_DIGITAL, IAIST.GLATT, MIST.GLATT, PIST.GLATT, NIST.A.GLATT, MELD.NAMUR, FAULT_CODE, WARN_CODE, ZSW1.BM, ZSW2.BM, CU.ZSW1

- **Function Diagram:**
  - IF1 Diag send Wort 1...16
  - p2051[0...31] WORD r2053[0...31] WORD r2061[0...30] DWORD r2063[0...30] DWORD

- **Telegram Assignment:**
  - acc. to p0922

- **PROFIBUS PROFINET USS**

### DO: DC_CTRL, CU_DC

**PROFIdrive - PZD send signals interconnection**

- **Manufacturer:** SIEMENS
- **Function Diagram:** fp_2450_96_VSD
- **Date:** 2013-05-14
- **Version:** v 1.4.1
- **Model:** SINAMICS DCM
### Signal sources for ZSW1 for telegrams 1, 3, 4, 20, 352

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>[Function diagram] internal status word</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW1.0</td>
<td>1 = Ready to switch on</td>
<td>p2080[0] = r0899.0</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.1</td>
<td>1 = Ready</td>
<td>p2080[1] = r0899.1</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.2</td>
<td>1 = Operation enabled</td>
<td>p2080[2] = r0899.2</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.3</td>
<td>1 = Fault effective</td>
<td>p2080[3] = r2193.9</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.4</td>
<td>1 = No coasting down active (OFF2 inactive)</td>
<td>p2080[4] = r0899.4</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.5</td>
<td>1 = No quick stop active (OFF3 inactive)</td>
<td>p2080[5] = r0899.5</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.6</td>
<td>1 = Switching on inhibited active</td>
<td>p2080[6] = r0899.6</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.7</td>
<td>1 = Alarm effective</td>
<td>p2080[7] = r2197.7</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.8</td>
<td>1 = Speed setpoint - actual value deviation within tolerance L_off</td>
<td>p2080[8] = r2197.7</td>
<td>[2534.6]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.9</td>
<td>1 = Control request</td>
<td>p2080[9] = r0899.9</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.10</td>
<td>1 = f or n comparison value reached or exceeded</td>
<td>p2080[10] = r2199.1</td>
<td>[2537.6]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.11</td>
<td>1 = M limit not reached</td>
<td>p2080[11] = r1407.7</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.12</td>
<td>1 = Holding brake open reserved (always value 0)</td>
<td>p2080[12] = r0899.12</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.13</td>
<td>1 = No warning overtemperature motor</td>
<td>p2080[13] = r2153.14</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.14</td>
<td>1 = Motor rotates forwards (n_act &gt;= 0) 0 = Motor rotates backwards (n_act &lt; 0)</td>
<td>p2080[14] = r2197.3</td>
<td>[2534.6]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW1.15</td>
<td>No warning thermal overload power unit 1 = Command data set CDS effective bit 0</td>
<td>p2080[15] = r2135.15</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
</tbody>
</table>

- **<1>** For telegram 20
- **<2>** ZSW1 is formed via bincor-connector converter (B1: p2080[0...15], inversion: p2088[0]...p2088[0].15).
- **<3>** The drive object is ready for acceptance.
### Signal destinations for ZSW2 for telegrams 3, 4

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZSW2.0</td>
<td>1 = Drive data set selection DDS effective bit 0</td>
<td>p2081[0] = r0051.0</td>
<td>[8565.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.1</td>
<td>1 = Drive data set selection DDS effective bit 1</td>
<td>p2081[1] = r0051.1</td>
<td>[8565.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.2</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.3</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.4</td>
<td>Reserved</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>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.6</td>
<td>1 = Alarm class bit 1</td>
<td>p2081[6] = r2139.12</td>
<td>[2548.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.7</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.8</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.9</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.10</td>
<td>1 = Pulses enabled</td>
<td>p2081[10] = r0899.11</td>
<td>[2585.7]</td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.11</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.12</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.13</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>ZSW2.15</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>

**Var:** 7

**Type:** 7

**Baud rate:** 9600

**Command:** 9

**Identification:** 9

**Data:** 9

**DO:** DC_CTRL

**DO address:** 9

**Signal identification:** 9

**Function diagram:** fp_2454_96_VSD

**Function:** 2454

**Inverted:** -

**Sampling time:** 1020.7
3 Function diagrams

3.6 PROFIdrive

Fig. 3-39 2460 – IF1 receive telegram, free interconnection via BICO (p0922 = 999)

PROFIBUS PROFINET USN

PROFIdrive receive telegram

Header
Drive object 1
Drive object 2

: : :

Drive object n

: :

Trail

Reference variables for further interconnection p200x

<1> To comply with the PROFIdrive profile, receive word 1 must be used as control word 1 (STW1)
(due to bit 10, "Control request").

<2> Using the two connector-binector converters, the bits from two of the PZD receive words (5 to 64)
can be extracted and used as binectors.

<3> For words and double words, the 4000 hex = 100% and 4000 0000 hex = 100% representations apply respectively.
For further interconnection, the reference variables p200x are applicable (100% corresponds to p200x).
The following applies to temperatures: 100 °C corresponds to 100% = 4000 hex or 4000 0000 hex, and 0 °C corresponds to 0%.

<4> The connector-binector converter only ever converts the lower 16 bits, regardless of the input variable.

<5> Each PZD word can be assigned a word or a double word. Only one of the interconnection parameters r2050 and r2060 can have a value ≠ 0 for a PZD word.

<6> With multiple interconnection of a connector output, all connector inputs must have the data type "Integer" or "FloatingPoint".

1 2 3 4 5 6 7 8

DO: DC_CTRL

PROFIdrive - IF1 receive telegram, free interconnection via BICO (p0922 = 999)

SIEMENS fp_2460_96_VSD Function diagram - 2460 -

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3 Function diagrams

3.6 PROFIdrive

SINAMICS DCM

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Fig. 3-40 2470 – IF1 send telegram, free interconnection via BICO (p0922 = 999)

Reference variables for further interconnection p200x

<1> To comply with the PROFIdrive profile, send word 1 must be used as status word 1 (ZSW1) rather than as the DWORD.

<2> Each PZD send word can be supplied via connector input p2051 (WORD) or via p2061 (DWORD). An interconnection of the two relevant connector inputs is not possible.

<3> Using the two connector-binker converters at [2472], the bits from 5 of the send words can be interconnected with any binectors.

<4> Physical word and double word values are inserted in the telegram as referenced variables. The reference variables p200x are applicable (telegram content = 4000 hex or 4000 0000 hex for double words if the input variable has the value p200x). The following applies to temperatures: 100° C corresponds to 100% = 4000 hex or 4000 0000 hex, and 0° C corresponds to 0%.
Fig. 3-42 2481 – IF1 receive telegram, free interconnection via BICO (p0922 = 999)

1. The P2D receive words 6 to 20 are only available on the DO CUC DC.
2. Using the two connector-bus converter, one of the P2D receive words 0 to 3 or 6 to 20 can be converted into bipoles.
3. For words, the 4096 hex are 100% representation applies.

DO CUC DC, DCM, TM31, TM50

PROFdrive - IF1 receive telegram, free interconnection via BICO (p0922 = 999)
**Fig. 3-43** 2483 – IF 1 send telegram, free interconnection via BICO (p0922 = 999)

**<1>** Using the two connector-binecor converters at [2472], the bits from 5 of the send words can be interconnected with any binectors.

**<2>** Physical word values are inserted in the telegram as referenced variables.

(Telegram content = 4000 hex if the input variable has the value p200x).

**<3>** Only for CU_DC

---

**Table:**

<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><strong>DO:</strong> CU_DC, TM15DI_DO, TM31, TM150</td>
<td><strong>SIEMENS</strong></td>
<td><strong>fp_2483_96_VSD</strong></td>
<td><strong>Function diagram</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PROFIdrive - IF1 send telegram, free interconnection via BICO (p0922 = 999)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
To define the PROFIdrive profile, receive word 1 1 (SW1) (see bit 10 'control words') must be used as control word 1 (SW1).

For further information on the reference values, see the PROFIdrive manual in the SINAMICS DCM.

Reference variables for interconnection:

- Do, DC-CTRL
- P2 receive telegram
- Free interconnection via BICO (p0922 = 999)
Fig. 3-45 2487 – IF2 send telegram, free interconnection via BICO (p0922 = 999)

IF2 PZD send DW

Reference variables for further interconnection p200x

1. To maintain the PROFIdrive profile, send word 1 must be used as status word 1 (Z3W1), not as DWORD.
2. Each PZD send word can be supplied via connector input p8851 (WORD) or via p8861 (DWORD). An interconnection of the two relevant connector inputs is not possible.
3. Physical word and double word values are inserted in the telegram as referenced variables. The reference variables p200x are applicable (telegram content = 4000 hex or 4000 0000 hex for double words if the input variable has the value p200x). The following applies to temperatures: 100 °C corresponds to 100% = 4000 hex or 4000 0000 hex, and 0 °C corresponds to 0%.
4. Using the two connector-binector converters at [2489], the bits from 5 of the send words can be interconnected with any binectors.
5 Binektor-connector converter

Fig. 3-46 2489 – IF2 status words, free interconnection

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Function diagrams

3.6 PROFIdrive
### Signal destinations for CU_STW1 for telegram 390

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_STW1.0</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.1</td>
<td>RTC real-time synchronization PING</td>
<td></td>
<td>p3104 = r2090.1</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.2</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.3</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.4</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.5</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.6</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.7</td>
<td>[f] Acknowledge fault</td>
<td></td>
<td>p2103[0] = r2090.7</td>
<td>[2546.2]</td>
</tr>
<tr>
<td>CU_STW1.8</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.9</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.10</td>
<td>Control by PLC</td>
<td></td>
<td>p3116 = r2090.10</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.11</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_STW1.12</td>
<td>Reserved</td>
<td></td>
<td>-</td>
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</tr>
<tr>
<td>CU_STW1.13</td>
<td>Reserved</td>
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</tr>
<tr>
<td>CU_STW1.14</td>
<td>Reserved</td>
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<td>-</td>
</tr>
<tr>
<td>CU_STW1.15</td>
<td>Reserved</td>
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<td>-</td>
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</tbody>
</table>
### Signal destinations for CU_ZSW1 for telegram 390

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
<th>&lt;1&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>CU_ZSW1.0</td>
<td>Reserved</td>
<td></td>
<td></td>
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<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.1</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.2</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.3</td>
<td>1 = Fault effective</td>
<td>p208[3] = r2139.3</td>
<td>[2548.7]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.4</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.5</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.6</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.7</td>
<td>1 = Alarm effective</td>
<td>p208[7] = r2139.7</td>
<td>[2548.7]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.8</td>
<td>1 = Synchronize system time</td>
<td>p208[8] = r0899.8</td>
<td>[2585.7]</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.9</td>
<td>1 = No group alarm present</td>
<td>p208[9] = r3114.9</td>
<td>[8065.7]</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.10</td>
<td>1 = No group fault present</td>
<td>p208[10] = r3114.10</td>
<td>[8060.8]</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.11</td>
<td>Reserved</td>
<td>p208[11] = r3114.11</td>
<td></td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.12</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.13</td>
<td>Reserved</td>
<td></td>
<td></td>
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<td>-</td>
</tr>
<tr>
<td>CU_ZSW1.14</td>
<td>Reserved</td>
<td></td>
<td></td>
<td>-</td>
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<tr>
<td>CU_ZSW1.15</td>
<td>Reserved</td>
<td></td>
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<td>-</td>
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</tr>
</tbody>
</table>

<1> CU_ZSW1 is formed via binary-connector converter (BI: p208[0…15], inversion: p208[0…15]).

---

**Signal diagram**

- **Signal destinations for CU_ZSW1 for telegram 390**
- **Interconnection parameter**
  - DO: CU_DC
  - PROFIdrive - CU_ZSW1 status word 1 Control Unit interconnection
  - 2013-05-14 v 1.4.1
  - SINAMICS DCM
### Signal destinations for O_DIGITAL for telegram 390

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>A_DIGITAL.0</td>
<td>CUD digital output 0 (DO 0)</td>
<td>p50771[0] = r2091.0</td>
<td>[2055.1]</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.1</td>
<td>CUD digital output 1 (DO 1)</td>
<td>p50772[0] = r2091.1</td>
<td>[2055.1]</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.2</td>
<td>CUD digital output 2 (DO 2)</td>
<td>p50773[0] = r2091.2</td>
<td>[2055.1]</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.3</td>
<td>CUD digital output 3 (DO 3)</td>
<td>p50774[0] = r2091.3</td>
<td>[2055.1]</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.4</td>
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<td>-</td>
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<tr>
<td>A_DIGITAL.5</td>
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<tr>
<td>A_DIGITAL.6</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>A_DIGITAL.7</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.8</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.9</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.10</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.11</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.12</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.13</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.14</td>
<td>Reserved</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A_DIGITAL.15</td>
<td>Reserved</td>
<td>-</td>
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</tr>
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</table>

<1> Default can be changed by user
### Signal destinations for L_DIGITAL for telegram 390

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</th>
<th>Function diagram</th>
<th>Inverted</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_DIGITAL 0</td>
<td>CUD digital input 4 (DI 4)</td>
<td>p2082[0] = r53010.8</td>
<td>[2060.8]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 1</td>
<td>CUD digital input 5 (DI 5)</td>
<td>p2082[1] = r53010.10</td>
<td>[2060.8]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 2</td>
<td>CUD digital input 6 (DI 6)</td>
<td>p2082[2] = r53010.12</td>
<td>[2065.8]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 3</td>
<td>CUD digital input 7 (DI 7)</td>
<td>p2082[3] = r53010.14</td>
<td>[2065.8]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 4</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 5</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 6</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 7</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 8</td>
<td>CUD digital input 0 (DI 0)</td>
<td>p2082[8] = r53010.0</td>
<td>[2050.7]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 9</td>
<td>CUD digital input 1 (DI 1)</td>
<td>p2082[9] = r53010.2</td>
<td>[2050.7]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 10</td>
<td>CUD digital input 2 (DI 2)</td>
<td>p2082[10] = r53010.4</td>
<td>[2050.7]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 11</td>
<td>CUD digital input 3 (DI 3)</td>
<td>p2082[11] = r53010.6</td>
<td>[2050.7]</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 12</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 13</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 14</td>
<td>Reserved</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>E_DIGITAL 15</td>
<td>Reserved</td>
<td></td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**<1>** Default can be changed by user

**<2>** Can be set via p50789[0…3] as digital input or digital output.

---

**Fig. 3-50**

**2498 – E\_DIGITAL_interconnection**

**PROFdrive - L\_DIGITAL_interconnection**

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**SINAMICS DCM**

**PROFdrive sampling time**

**[1020.7]**
3.7 Internal control/status words

Function diagrams

<table>
<thead>
<tr>
<th>Word</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2534</td>
<td>Status word, monitoring functions 1</td>
<td>724</td>
</tr>
<tr>
<td>2537</td>
<td>Status word, monitoring functions 3</td>
<td>725</td>
</tr>
<tr>
<td>2546</td>
<td>Control word, faults/alarms</td>
<td>726</td>
</tr>
<tr>
<td>2548</td>
<td>Status word, faults/alarms 1 and 2</td>
<td>727</td>
</tr>
<tr>
<td>2580</td>
<td>Control word, sequence control</td>
<td>728</td>
</tr>
<tr>
<td>2585</td>
<td>Status word, sequence control</td>
<td>729</td>
</tr>
</tbody>
</table>
Function diagrams

3.7 Internal control/status words

Fig. 3-51 2534 – Status word, monitoring functions 1

<table>
<thead>
<tr>
<th>Bit no</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Status word monitoring functions 1</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
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<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>L-off; Speed sensor - actual value deviation within tolerance</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

SIEMENS

List Manual (LH8), 02/2015, 6RX1800-0ED76
### Internal control/status words - Status word monitoring functions 3

<table>
<thead>
<tr>
<th>Bit no.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Status word monitoring functions 3</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
</tr>
<tr>
<td>2</td>
<td>1 = n comparison value reached or exceeded</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>
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<td>12</td>
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<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> This parameter belongs to the Control Unit and serves as the source for simultaneous acknowledgment of all faults on all drive objects.

<2> These parameters belong to Command Data Sets (CDS), depending on the relevant drive object (DO).

### Function diagrams

**Fig. 3-53** 2546 – Control word, faults/alarms

**SINAMICS DCM**

**List Manual (LH8), 02/2015, 6RX1800-0ED76**

**DO: All Objects**  Internal control/status words - Control word faults/alarms
### 3.7 Internal control/status words

#### Status word, faults/alarms 1

<table>
<thead>
<tr>
<th>Bit no.</th>
<th>Status</th>
<th>ZSW fault/alarms 1</th>
<th>Raw Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Acknowledgment in progress</td>
<td>002139.00</td>
<td>1020.7</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
<td>002139.03</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
<td>002139.06</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1 = Fault effective</td>
<td>002139.07</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>002139.08</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1 = Safety message effective (not active with DCM)</td>
<td>002139.11</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1 = Internal message 1 effective</td>
<td>002139.12</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1 = Alarm effective</td>
<td>002139.13</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1 = Internal message 2 effective</td>
<td>002139.14</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
<td>002139.15</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td>002139.16</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1 = Alarm class bit 0</td>
<td>002139.17</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>1 = Alarm class bit 1</td>
<td>002139.18</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
<td>002139.19</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Reserved</td>
<td>002139.20</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
<td>002139.21</td>
<td></td>
</tr>
</tbody>
</table>

#### Status word, faults/alarms 2

<table>
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<th>Bit no.</th>
<th>Status</th>
<th>ZSW fault/alarms 2</th>
<th>Raw Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Fault, encoder 1</td>
<td>002135.00</td>
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</tr>
<tr>
<td>1</td>
<td>1 = Fault, encoder 2</td>
<td>002135.01</td>
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</tr>
<tr>
<td>2</td>
<td>1 = Fault, encoder 3</td>
<td>002135.02</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Reserved</td>
<td>002135.03</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>002135.04</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
<td>002135.05</td>
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</tr>
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<td>6</td>
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<td>Reserved</td>
<td>002135.09</td>
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<td>Reserved</td>
<td>002135.10</td>
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<td>11</td>
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<td></td>
</tr>
<tr>
<td>12</td>
<td>1 = Fault Overtemperature Motor</td>
<td>002135.12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>1 = Fault Thermal overload Power unit</td>
<td>002135.13</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1 = Warning Overtemperature Motor</td>
<td>002135.14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1 = Warning Thermal overload Power unit</td>
<td>002135.15</td>
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</tr>
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</table>

#### Internal control/status words - Status word, faults/alarms 1 and 2

<table>
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<th>Raw Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1 = Acknowledgment in progress</td>
<td>002139.00</td>
</tr>
<tr>
<td>1</td>
<td>Reserved</td>
<td>002139.03</td>
</tr>
<tr>
<td>2</td>
<td>Reserved</td>
<td>002139.06</td>
</tr>
<tr>
<td>3</td>
<td>1 = Fault effective</td>
<td>002139.07</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>002139.08</td>
</tr>
<tr>
<td>5</td>
<td>1 = Safety message effective (not active with DCM)</td>
<td>002139.11</td>
</tr>
<tr>
<td>6</td>
<td>1 = Internal message 1 effective</td>
<td>002139.12</td>
</tr>
<tr>
<td>7</td>
<td>1 = Alarm effective</td>
<td>002139.13</td>
</tr>
<tr>
<td>8</td>
<td>1 = Internal message 2 effective</td>
<td>002139.14</td>
</tr>
<tr>
<td>9</td>
<td>Reserved</td>
<td>002139.15</td>
</tr>
<tr>
<td>10</td>
<td>Reserved</td>
<td>002139.16</td>
</tr>
<tr>
<td>11</td>
<td>1 = Alarm class bit 0</td>
<td>002139.17</td>
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<tr>
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<td>1 = Alarm class bit 1</td>
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</tr>
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<td>Reserved</td>
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<td>002139.20</td>
</tr>
<tr>
<td>15</td>
<td>Reserved</td>
<td>002139.21</td>
</tr>
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<td>0</td>
<td>1 = Fault, encoder 1</td>
<td>002135.00</td>
</tr>
<tr>
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<td>1 = Fault, encoder 2</td>
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<td>1 = Fault, encoder 3</td>
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<td>Reserved</td>
<td>002135.03</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
<td>002135.04</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
<td>002135.05</td>
</tr>
<tr>
<td>6</td>
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<td>002135.06</td>
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<tr>
<td>11</td>
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<td>002135.11</td>
</tr>
<tr>
<td>12</td>
<td>1 = Fault Overtemperature Motor</td>
<td>002135.12</td>
</tr>
<tr>
<td>13</td>
<td>1 = Fault Thermal overload Power unit</td>
<td>002135.13</td>
</tr>
<tr>
<td>14</td>
<td>1 = Warning Overtemperature Motor</td>
<td>002135.14</td>
</tr>
<tr>
<td>15</td>
<td>1 = Warning Thermal overload Power unit</td>
<td>002135.15</td>
</tr>
</tbody>
</table>
3.7 Internal control/status words

**Fig. 3-55 2580 – Control word, sequence control**

- **ON/OFF1**: From STARTER/AOP30
  - PC Ctrl active: [3113.4] 000807.00
  - ON/OFF (OFF1): p00840 [C]

- **OC/OFF2**: From STARTER/AOP30
  - [3113.7] 003982.00

- **OFF2 S_src 1**: p00844 [C]
- **OFF2 S_src 2**: p00845 [C]

- **E-Stop E stop stat**: [2070.6] 53100.00

- **OC/OFF3**: From STARTER/AOP30
  - [3113.7] 003982.02

- **OFF3 S_src 1**: p00848 [C]
- **OFF3 S_src 2**: p00849 [C]

- **Operation enable**: [3113.7] 003982.03

- **DI 2 (X177.13)**: [2050.6] 53100.4

- **p51618 (0)** LOCAL enab behav

**Bit no.**

- **Control word sequence control**
  - 0 = OFF 1 active
  - 1 = Operating condition no coasting down active (OFF2 inactive)
  - 0 = OFF 2 active
  - 1 = Operating condition no quick stop active (OFF3 inactive)
  - 0 = OFF 3 active
  - 1 = Enable operation
  - 1 = Enable ramp-function generator
  - 1 = Start ramp-function generator
  - 0 = Freeze ramp-function generator
  - 1 = Enable speed setpoint
  - 1 = Command open brake
  - 1 = Jog 1
  - 1 = Jog 2
  - 1 = Control via PLC
  - Reserv
  - 1 = Speed controller enable
  - Reserv
  - 1 = Command close brake
  - Reserv

- **SDW seq ctrl**
  - 00898
  - 00898.0
  - 00898.01
  - To sequence control [2650]
  - 00898.02
  - To sequence control [2650]
  - 00898.03
  - To sequence control [2650]
  - 00898.04
  - To sequence control [2650]
  - 00898.05
  - To ramp-function generator [3152.1]
  - 00898.06
  - To ramp-function generator [3151.3]
  - 00898.07
  - To ramp-function generator [3151.3]

- **Switch on/Shutdown**
  - Switch-on command [3130.7] [1020.7]
  - Switch-on command [3130.2] 16,000 µs

---

**Internal control/status words**

- **Function diagram**
  - DO: DCCTRL
  - Internal control/status words - Control word sequence control
  - SIEMENS: fp_2580_96_VSD
  - Function diagram: SINAMICS DCM
  - 2013-05-14 v 1.4.1
  - SINAMICS DCM
3 Function diagrams

3.7 Internal control/status words

Fig. 3-56 2585 – Status word, sequence control

Sequence control [2650]

- Bit no:
  - 0 = Ready to switch on
  - 1 = Ready
  - 2 = Operation enabled (drive follows n_set)
  - 3 = Jog active
  - 4 = No coasting down active (OFF2 inactive)
  - 5 = No quick stop active (OFF3 inactive)
  - 6 = Switching on inhibited active
  - 7 = Drive ready
  - 8 = Controller enable
  - 9 = Control request: \(<1>\)
  - 10 = Reservec
  - 11 = Enable pulses
  - 12 = Holding brake open
  - 13 = Command close holding brake
  - 14 = Brake control pulse enable
  - 15 = Brake control setpoint enable

- ZSW_seq_ctrl
  - 00899
  - 00899.0
  - 00899.01
  - 00899.02
  - 00899.03
  - 00899.04
  - 00899.05
  - 00899.06
  - 00899.07
  - 00899.08
  - 00899.09
  - 00899.11
  - 00899.12
  - 00899.13
  - 00899.14
  - 00899.15

<\(^1\)> Process data from control system is requested.

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<th>3</th>
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<td>v 1.4.1</td>
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<td>- 2585 -</td>
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</table>
3.8 Sequence control

Function diagrams

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Description</th>
<th>Page</th>
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<tbody>
<tr>
<td>2650</td>
<td>Sequencer (part 1)</td>
<td>731</td>
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<tr>
<td>2651</td>
<td>Sequencer (part 2)</td>
<td>732</td>
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<tr>
<td>2655</td>
<td>Missing enable signals, logic operations</td>
<td>733</td>
</tr>
<tr>
<td>2660</td>
<td>Optimization runs</td>
<td>734</td>
</tr>
</tbody>
</table>
3 Function diagrams

3.8 Sequence control

Fig. 3-57 2650 – Sequencer (part 1)

- Drive coasts down
- Torque-free
- Line contactor OFF

- Drive decelerates to n=0 as quickly as possible
- Torque-free
- Line contactor OFF
- SS: Switch Off

- ZSW1 bit 0,1,2,3 =true, bit 2,9=false

- S1: Switching On Inhibited
  - ZSW1 bit 6=true, 0,1,2,3,4=false

- S2: Ready For Switching On
  - ZSW1 bit 0=true, 1,2,3,4=false

- S3: Switched On
  - ZSW1 bit 0,1=true, 2,3,4=false

- S4: Operation
  - ZSW1 bit 0,1,2=true, 3,4=false
  - Enable ramp-function generator, speed generator, Ia controller

Note 1: Statuses S1 to S5 are defined in PROFIdrive profile V4.1
Note 2: "p.e." means "pulses enabled"
3.8 Sequence control

Sequence control

Control of operating state

Controller auxiliaries

Controller line contactor

Control of switching on/off via setpoint

Wait for voltage on power unit

Automatic hot restart

Control of jog

Fault handling

1. Aux t. OFF p50094
2. Line cont feedb p50891 [C]
3. Line cont t_ON p50093
4. DC cont t_wait p50095
5. Cont in DC cct p50098
6. S ctr set thresh p50091
7. S ctr V at PU t p50089
8. V_line_fail t perm p50086
9. S ctr jog t p50085
11. Fault addr inf p50047

Fault on

Aux on

[1020.7]

16,000 µs
3.8 Sequence control

Fig. 3-59 2655 – Missing enable signals, logic operations

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<tr>
<th>Bit no.</th>
<th>Meaning</th>
<th>Memory address (r)</th>
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<td>0</td>
<td>1 = OFF1 enable missing</td>
<td>896.0 = 0</td>
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<tr>
<td>1</td>
<td>1 = OFF2 enable missing</td>
<td>896.1 = 0</td>
</tr>
<tr>
<td>2</td>
<td>1 = OFF3 enable missing</td>
<td>896.2 = 0</td>
</tr>
<tr>
<td>3</td>
<td>1 = Enable operation missing</td>
<td>896.3 = 0</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0</td>
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<tr>
<td>6</td>
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<tr>
<td>8</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1 = temp-function generator enable missing</td>
<td>896.4 = 0</td>
</tr>
<tr>
<td>11</td>
<td>1 = temp-function generator start missing</td>
<td>896.5 = 0</td>
</tr>
<tr>
<td>12</td>
<td>1 = Setpoint enable missing</td>
<td>896.6 = 0</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>1 = OFF1 enable internal missing</td>
<td>50000 = 7.2 ... 7.6</td>
</tr>
<tr>
<td>17</td>
<td>1 = OFF2 enable internal missing</td>
<td>50000 = 10</td>
</tr>
<tr>
<td>18</td>
<td>1 = OFF3 enable internal missing</td>
<td>50000 = 9.3</td>
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<tr>
<td>19</td>
<td>1 = Pulse enable internal missing</td>
<td>50000 = 1.2 ... 1.5</td>
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<td>20</td>
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<td>22</td>
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<tr>
<td>24</td>
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</tr>
<tr>
<td>25</td>
<td>0</td>
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</tr>
<tr>
<td>26</td>
<td>1 = Drive inactive or not operational</td>
<td>50000 ≥ 1.0</td>
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<tr>
<td>27</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>1 = Brake open missing</td>
<td>896.14 = 0</td>
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<tr>
<td>29</td>
<td>0</td>
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<tr>
<td>30</td>
<td>1 = Speed controller inhibited</td>
<td>898.12 = 0</td>
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<tr>
<td>31</td>
<td>1 = Jog setpoint active</td>
<td>898.8 / 898.9 = 1</td>
</tr>
</tbody>
</table>

1 2 3 4 5 6 7 8
DO: DC_CTRL

Sequence control - Missing enables, logic operations

Function diagram - 2655 -
3 Function diagrams

3.8 Sequence control

Carry out an optimization run:
1) Select required optimization run using p50051
2) Switch on drive (OFF1 0->1, not relevant for p50051 = 30)
3) Wait until optimization run is finished
   (drive enters state 08 of its own accord)
4) Check whether the results of the optimization run are viable

Properties of optimization runs:

p50051 =
24 ... Optimization of field current regulation (duration up to 1 min)
   (-> p50112 (Rf), p50116 (Lf), p50255 (Kp), p50256 (Tn))
25 ... Optimization of armature current control (duration up to 1 min)
   (-> p50110 (Ra), p50111 (La), p50591 (La_fak),
      p50594 (La), p50595 (La_fak), p50155 (Kp), p50156 (Tn))
26 ... Optimization of speed control by means of step response (duration up to 1 min)
   (-> p50225 (Kp), p50226 (Tn), p50228 (T_set, filt), p50540 (T_accel))
27 ... Optimization of EMF control (incl. field characteristic recording) (duration up to 1 min)
   (-> p50117 to p50139 (field characteristic),
      p50275 (Kp), p50276 (Tn))
28 ... Optimization of compensation of friction (duration up to 1 min)
   (-> p50520 to 50530 (friction characteristic)) from V1.2
29 ... Optimization of closed-loop speed control for drives with a mechanical system
   capable of oscillation (time up to 10 min)
   (-> p50225 (Kp), p50226 (Tn), p50228 (T_set,filt), p50540 (T_accel))
30 ... Optimization for the CCP

Sequence control - Optimization runs

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<td>2660</td>
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<td>VSD</td>
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<td>11.06.2014</td>
<td>v 1.4.1</td>
</tr>
</tbody>
</table>

DO: DC_CTRL

Specification for dynamics of speed controller

Optimization runs

Opt run sel p50051

- F60050 Opt_run abort int cause
- F60051 Opt_run lim val violated
- F60052 Opt_run abort ext cause
- 52900 Opt run outp 0 [%]
- 52901 Opt run outp 1 [%]
- 52902 Opt run outp 2 [%]
- 52903 Opt run outp 3 [%]
- 52904 Opt run outp 4 [%]

Fig. 3-60 2660 – Optimization runs

List Manual (LH8), 02/2015, 6RX1800-0ED76
3.9 Brake control

Function diagrams

2750 – Brake control 736
3.9 Brake control

Brake control

- Br ctrl t open
  -10.00...10.00 [s] p50087 (0.00)

- Br ctrl t close
  0.00...10.00 [s] p50088 (0.00)

Seq_ctrl outp_sig

Brake control

Cmd open brake p50887 (0.00)

Cmd close brk p50888 (0.00)

Firing pulse enable [2650]

Closed brake inv [53210.01]

Close brake [53210.00] [2585.4]

Priority:
1. RESET
2. SET

n messages [8020.5]

n < n min

10029.08

SIEMENS

fp_2750_96_VSD

Function diagram

2013-05-14 v 1.4.1 SINAMICS DCM

- 2750 -
## 3.10 Setpoint channel

### Function diagrams

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<td>3105 – 4-stage joystick switch</td>
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<td>3110 – Motorized potentiometer</td>
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<td>3113 – AOP30 display and control unit</td>
<td>742</td>
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<td>3115 – Fixed setpoint</td>
<td>743</td>
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<td>744</td>
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<tr>
<td>3125 – Jog setpoint</td>
<td>745</td>
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<td>3130 – Creep setpoint</td>
<td>746</td>
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<td>3135 – Setpoint processing</td>
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<tr>
<td>3150 – Ramp-function generator (Part 1)</td>
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<tr>
<td>3151 – Ramp-function generator (Part 2)</td>
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<tr>
<td>3152 – Ramp-function generator (Part 3)</td>
<td>750</td>
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<tr>
<td>3155 – Limit behind ramp-function generator</td>
<td>751</td>
</tr>
</tbody>
</table>
Function diagrams

3100 - Fixed values (part 1)

11 fixed values
Setting range
-200.00 to +200.00%

5 fixed values
Setting range
-3.4E38% to 3.4E38%

8 fixed control bits

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<tr>
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</table>

0.00% → r52000
100.00% → r52001
200.00% → r52002
-100.00% → r52003
-200.00% → r52004
50.00% → r52005
150.00% → r52006
-50.00% → r52007
-150.00% → r52008
0.00% → r00000
100.00% → r00001

Setpoint channel - Fixed values
3. Function diagrams

Fig. 3-63 3102 - Fixed values (part 2)

- Fixed value 1 [%] p02900
- Fixed value 2 [%] p02901
- Fixed value M [Nm] p02930

- [Value ranges and settings]

- [Diagram showing fixed values and settings]
3 Function diagrams

3.10 Setpoint channel

Fig. 3-64 3105 – 4-stage joystick switch

Set step S2 sig s
p51662
(0)
Set step S3 sig s
p51663
(0)
Set step S4 sig s
p51664
(0)
Trav comm 1 sig s
p51668
(0)
Trav comm 2 sig s
p51661
(0)

Output signal = r52510
Speed setpoint in 4 stages

<table>
<thead>
<tr>
<th>1</th>
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<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>SL / SR</td>
<td>S2</td>
<td>S3</td>
<td>S4</td>
<td>0</td>
<td>n1</td>
<td>n2</td>
<td>n3</td>
</tr>
<tr>
<td>E.g. 20% Slow</td>
<td>Medium</td>
<td>Fast</td>
<td>Full</td>
<td>E.g. 100%</td>
<td>p51667</td>
<td>E.g. 80%</td>
<td>p51666</td>
</tr>
<tr>
<td>4.000 µs</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Input signals
- Control commands from joystick switch
- Activation of setpoint stages

Set out (%) r52510
Operating mode Motor potentiometer

- Motorized potentiometer ramp-function generator is bypassed in automatic mode (same effect as with p50462 and p50463 = 0)
- Motorized potentiometer ramp-function generator operates in manual and automatic mode
- Output value is not stored:
  - In all operating states > 05, r52240 is set to p50467 (motorized potentiometer initial value)
  - Initial point after DN specified by p50467 (motorized potentiometer initial value)
- Non-volatile memory for output value:
r52240 remains stored in all operating states

---

**Fig. 3-65 3110 – Motorized potentiometer**

<table>
<thead>
<tr>
<th>p50460(D)</th>
<th>p50473(D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**ModP aut s sig s**

- p50461 [C]
- p50468(D) [-570.00]

**ModP n_min**

- p50469(D) [-570.00]

**ModP n_max**

- p50468(D) [570.00]

**ModP CW/CCW sig s**

- p50470 [C]
- p50471 [C]

**ModP man/aut sig s**

- p50472 [C]

**ModP incr sig s**

- p50473 [C]
- p50472 [C]

**Ramp-function generator with permanent memory**

- MotP t_dif dy/dt
  - 0.01...300.00 [s] p50462(D) [10.00]
- MotP t_dn
  - 0.01...300.00 [s] p50463(D) [10.00]
- MotP t_up
  - 0.01...300.00 [s] p50464(D) [10.00]

**MotP out [%]**

- r52241

**MotP out dy/dt [%]**

- r52242

**MotP set [%]**

- r53200

**MotP ovp [%]**

- r53200.00

**MotP ovp dy/dt [%]**

- r53200.01

**<1> Mirrored onto and by p01035.**

**<2> Mirrored onto and by p01036.**
3 Function diagrams

3.10 Setpoint channel

Fig. 3-66 3113 – AOP30 display and control unit

AOP30

<1> Mirrored onto and by p1070.

<2> p3982 is for setting the control word from the STARTER control panel or from the AOP30. It must not be used by the user. Therefore it is not included in the List Manual.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<th>8</th>
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<tbody>
<tr>
<td>DO: DC_CTRL</td>
<td>[3113,96, VSD]</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Setpoint channel - Display and operating unit AOP30</td>
<td>Siemens</td>
<td>fp,3113,96, VSD</td>
<td>SINAMICS DCM</td>
<td>- 3113 -</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SINAMICS DCM
Fig. 3-67  3115 – Fixed setpoint

Setpoint channel - Fixed setpoint
3 Function diagrams

3.10 Setpoint channel

Fig. 3-70 3130 – Creep setpoint

Switch on/Shutdown

Switch-on command

DI 1 (X177.12)

Creep ON

Creep set by REG

To sequence control

Diagram generator

Function diagram
3.10 Setpoint channel

Fig. 3-71 3135 – Setpoint processing
3.10 Setpoint channel

Ramp-function generator (Part 1)

Parameter selection

Controller
Ramp-up integrator

RFG t_ramp-up 1
p50303[D]

RFG t_ramp-dn 1
p50304[D]

RFG init mdg 1
p50309[D]

RFG fin mdg 1
p50306[D]

No Quick_Stop act
0 = Ramp-function generator setting 4
activation

1 = Ramp-function generator setting 2
activation

1 = Ramp-function generator setting 3
activation

R-up int ena sig s
Enable for switchover of ramp-up integrator

RFG n_set outp [%]
[3152.8]

RFG r-up
[3152.8]

RFG r-dn
[3152.8]

Priority:
1) Activation via quick stop (OPF3)
2) Activation via p50637[p50638]
3) Activation via ramp-up integrator
4) Ramp-function generator setting 1

R-FRG r-up int ena sig s

p50345[D] (0)

1
60

6,1$0,&6'&0 Y
5DPSIXQFWLRQJHQHUDWRUSDUW

List Manual (LH8), 02/2015, 6RX1800-0ED76

Overview
Ramp-function generator setting
Effective parameters/values
HLZ RLZ AR ER
0 0 s 0 s 0 s 0 s
1 p50303 p50304 p50305 p50306
2 p50307 p50308 p50309 p50310
3 p50311 p50312 p50313 p50314
4 p50303 p50296 p50297 p50298

RUT = Ramp-up time
RDT = Ramp-down time
IR = Initial rounding
FR = Final rounding

F60401
R-FRG par_set sel not poss
Setpoint channel - Ramp-function generator (part 3)
3.11 Encoder evaluation

**Function diagrams**

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4704</td>
<td>Position sensing, encoders 1 ... 2</td>
<td>753</td>
</tr>
<tr>
<td>4710</td>
<td>Speed actual value sensing, motor encoder (encoder 1)</td>
<td>754</td>
</tr>
<tr>
<td>4711</td>
<td>Speed actual value sensing, encoder 2</td>
<td>755</td>
</tr>
<tr>
<td>4720</td>
<td>Encoder interface, receive signals, encoders 1 ... 2</td>
<td>756</td>
</tr>
<tr>
<td>4730</td>
<td>Encoder interface, send signals, encoders 1 ... 2</td>
<td>757</td>
</tr>
<tr>
<td>4735</td>
<td>Reference mark search, encoders 1 ... 2</td>
<td>758</td>
</tr>
<tr>
<td>4750</td>
<td>Absolute value for incremental encoder</td>
<td>759</td>
</tr>
</tbody>
</table>
3.11 Encoder evaluation

**Fig. 3-76 4704 – Position sensing, encoders 1 ... 2**
### Function Diagrams

#### Encoder Evaluation

**SINAMICS DCM 754**

*List Manual (LH8), 02/2015, 6RX1800-0ED76*

**Fig. 3-77** 4710 – Speed actual value sensing, motor encoder (encoder 1)

- **Encoder evaluation**
- **Motor encoder actual speed value sensing (encoder 1)**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Encoder OFF</td>
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<tr>
<td>2</td>
<td>Encoder ON</td>
</tr>
<tr>
<td>3</td>
<td>Encoder 1</td>
</tr>
<tr>
<td>4</td>
<td>Encoder 2</td>
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<td>5</td>
<td>Encoder 3</td>
</tr>
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<td>6</td>
<td>Encoder 4</td>
</tr>
<tr>
<td>7</td>
<td>Encoder 5</td>
</tr>
<tr>
<td>8</td>
<td>Encoder 6</td>
</tr>
</tbody>
</table>

*Note: The Encoder Data Set switchover is displayed at [8670].*
3 Function diagrams

3.11 Encoder evaluation

Fig. 3-78 4711 – Speed actual value sensing, encoder 2

Position raw signals from encoder 2

[F4704.8]

<1> The [E]ncoder Data Set switchover is displayed at [6570].

<2> For rotary motor encoder/linear direct measuring system, the following applies:
Parameters p2503 (LU per 10 mm) and p2506 (LU per load rev) also still have an effect.
3 Function diagrams

3.11 Encoder evaluation

Fig. 3-79 4720 – Encoder interface, receive signals, encoders 1 ... 2

- Select function to be activated (with bit value = 1)
  - Function no.
    - 0: Reference mark 1
    - 1: Reference mark 2
    - 2: Reference mark 3
    - 3: Reference mark 4

- Start/stop/read selected function
  - 0: Terminate function
  - 1: Read generated value
  - 2: Activate selected function
  - 3: No function

- Mode of the function to be activated
  - 7: Illegal setting
  - 0: Reference mark search (zero mark or BERO)

- Spare
  - 1: Request cyclic transmission of absolute position value in Gne_XIST2 (acknowledgement in Gne_ZSW bit 13)
  - 13: Request parking encoder (handshake with Gne_ZSW bit 14)
  - 15: Acknowledge encoder fault (present in Gne_ZSW, bit 15; handshake with Gne_ZSW bit 11)

- Bits 0...13 control what is transferred in Gne_XIST2.
  - Bit 7 = 0: Actual position value at reference mark
  - Bit 13 = 1: Cyclic absolute position value from absolute encoder

- Additional reference marks can be read out in accordance with the PROFinet profile.
  - <3> The bits are processed with the following order of priority (highest-priority -> lowest-priority bit): bit 14 -> bit 15 -> bit 4-7 -> bit 12 -> bit 13.
  - <4> Feedback issued in Gne_ZSW bit 14, but without actually parking the encoder.
Position value 2 of encoder n

The content of actual position value 2 (Gn_XIST2) at [4704] depends on Gn_STW and Gn_ZSW. The following options are available:

- Undefined with parking encoder (Gn_ZSW14 = 1).
- Where Gn_ZSW15 = 1, the fault code for encoder errors is present here.
- Actual position value at reference mark (where Gn_STW7 = 1 and Gn_ZSW4.7 > 0, with handshake).
- Cyclic absolute position value (cyclic value, where Gn_ZSW13 = 1).
3 Function diagrams

3.11 Encoder evaluation

Fig. 3-81 4735 – Reference mark search, encoders 1 ... 2

<1> The measured-value memory is read out using a handshake procedure, in acc. with [4720], [4730].
<2> Index [n-1] -> encoder n (n = 1, 2)
   Index [0] -> encoder 1
   Index [1] -> encoder 2

<3> All other bits in the encoder control word must be 0.
<4> Increasing actual position values (r0482) -> the 0/1 edge is evaluated.
   Decreasing actual position values (r0482) -> the 1/0 edge is evaluated.
   In this way, the same reference point is always used for travel to an external zero mark.

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<tr>
<td><strong>DO: DC_CTRL</strong></td>
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<tr>
<td><strong>Encoder evaluation</strong> - Find reference mark, encoder 11 ... 2</td>
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**SIEMENS**
fp_4735_98_VSD  Function diagram
2013-05-14 v 1.4.1 SINAMICS DCM
3 Function diagrams

3.11 Encoder evaluation

Fig. 3-82 4750 – Absolute value for incremental encoder

- Basic function or p4652 = 1
  - Gn_XIST1
  - Gn_XIST2
  - Reset input

- p4652 = 2
  - XIST1_EXT
  - Reset output

- p4652 = 3
  - XIST1_EXT
  - Reset output

SM config ext p00437[E] 13

Extended function

- XIST1_ERW res mode p04652[0...1] (0)

- XIST1_ERW actval p04653[0...1]

- Enc Gn_XIST1 p00482[0...1]
- Enc Gn_XIST2 p00483[0...1]
- Enc Gn_ZSW p00485[0...1]

- XIST1_ERW resS src p04655[0...1]

- Reset input

<1> Applies only for p0437.13 = 1.
<2> Bit 13: Request absolute value cyclically.
<3> p4652
  0 = Inactive
  1 = Reset with zero mark
  2 = Reset with BICO "Reset input"
  3 = Reset with selected zero mark

<table>
<thead>
<tr>
<th>1</th>
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<tr>
<td>4750 - Absolute value for incremental encoder</td>
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<td>Encoder evaluation</td>
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3.12 Armature circuit control

Function diagrams

6800 – Speed controller start pulse
6805 – Speed controller (part 1)
6810 – Speed controller (part 2)
6812 – Speed controller (part 3)
6815 – Speed controller (part 4)
6820 – Friction/moment of inertia compensation
6825 – Torque limitation (part 1)
6830 – Torque limitation (part 2)
6835 – Speed limitation controller
6840 – Current limitation (part 1)
6845 – Current limitation (part 2)
6850 – Actual armature current value sensing (part 1)
6851 – Actual armature current value sensing (part 2)
6852 – Selection of EMF actual value for armature current pre-control
6853 – Armature current controller adaptation
6854 – Armature circuit model parameters
6855 – Armature current regulation
6858 – Gating unit characteristic linearization
6860 – Command stage, armature gating unit
6862 – State limits
6865 – Simulation mode/thyristor check/commutation monitoring
6895 – Line-dependent EMF reduction
3.12 Armature circuit control

Fig. 3-83 6800 – Speed controller start pulse

This signal can be used as the setting value for the I component of the speed controller (function diagram 6815.1, p50631)

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</table>

SIEMENS fp_6800_96_VSD Function diagram 2013-05-14 v 1.4.1 SINAMICS DCM - 6800 -
3 Function diagrams

3.12 Armature circuit control

Fig. 3-85 6810 – Speed controller (part 2)

With slave drive:
Set n set and n controller I component

Set integrator so that
r52148 [6815.7] is equal to r52140 [6835.5]

[6815.5]

[02.07.1721]

[1020.7]

2,000 µs

Filter for actual speed value

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>n_ctr set sig s</td>
<td>p50625 (C)</td>
<td>52170</td>
<td>[3155.5]</td>
<td>n_act invert r53195.2</td>
<td>[9920.3]</td>
<td>n_act unsmoothed [1/min] p50010</td>
<td>[47710.6]</td>
</tr>
</tbody>
</table>
| n_ctr act sel sigs p50083(D) | [8805.3] | n ctr act sig s p50606 (C) | 0 [
| [6902.7] | n_ctr act sm [%] p50115(D) | r50025 | p02000 | n_load [1/min] r03770 |

100 ms

n act smooth [1/min] r00021

10...20000 [ms] p50208(D) (2)

Lead/lag t_filter 2...10000 [ms] p50209(D) (2)

p50207

[52179]

6810.6

[52177]

6810.1

6820.1

3.12 Armature circuit control

Armature circuit control – Speed controller (part 2)

DO: DC_CTRL

fp_6810_96_VSD

Function diagram

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3 Function diagrams

3.12 Armature circuit control

Fig. 3-86 6812 – Speed controller (part 3)

Generation of speed setpoint/actual speed value difference

[Image of function diagram]

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<td>- 5812 -</td>
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<tr>
<td>Armature circuit control - Speed controller (part 3)</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
<td></td>
<td></td>
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</tbody>
</table>
Friction compensation

Moment of inertia compensation (dv/dt injection)
Fig. 3-89 6825 – Torque limitation (part 1)
3.12 Armature circuit control

Fig. 3-91 6835 – Speed limitation controller

T lim pos sig s
p50510
(52002)

T lim neg sig s
p50511
(52004)

n_limb n_act sig s
p50509
(52167)

n_max neg dir
p50513(D) (-105.0)

n_max pos dir rot
p50512(D) (105.0)

n_limb Kp p0.10...200.00 p50515(D) (0.00)

n_limb lim min [%]
52137

n_limb lim up max [%]
52138

If ctrl motor flux [%]
[6910.5]

fb280

M

l_a set bef lim [%]
52134

[6840.1]

Tqe lim set [%]
52140

Switchover between current regulation and torque regulation

1

2

3

4

5

6

7

8

DO: DC_CTRL

Armature circuit control - Speed limitation controller

SIEMENS
fp_6835_96__VSD
Function diagram
2013-05-14 v 1.4.1
SINAMICS DCM

- 6835 -
3 Function diagrams

3.12 Armature circuit control

SINAMICS DCM

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Fig. 3-92 6840 – Current limitation (part 1)

Pos. current limit
la lim t d I fact
p50171[D] (100.0 %)

Min.

介入 current monitoring of
power unit
p50368 [1]

Intervention by speed-dependent
current limitation
p50366 [0]

Armature current controller
setpoint before current limitation

Armature current controller
setpoint before current limitation

Neg. current limit
la lim t d II fact
p50172[D] (-100.0 %)

Max.

Armature current controller
setpoint before current limitation
[6845.2] [3152.6]

DO: DC_CTRL

Armature circuit control - Current limitation (part 1)

 Siemens fp_6840_98_VSD Function diagram 2013-05-14 v 1.4.1 SINAMICS DCM - 6840 -
3 Function diagrams

3.12 Armature circuit control

SINAMICS DCM

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List Manual (LH8), 02/2015, 6RX1800-0ED76
3 Function diagrams

3.12 Armature circuit control

Fig. 3-95 6851 – Actual armature current value sensing (part 2)

Mean value over 6 current maximum values

Monitoring of current transformer polarity

RMS value over 6 current maximum values

DO: DC_CTRL

Armature circuit control - Actual armature current value sensing (part 2)

SINAMICS DCM

Siemens 2013-05-14 v 1.4.1 SINAMICS DCM
Armature circuit control - Selection of EMF actual value for armature current pre-control

1. How to set motor freq [%]
2. Act. set [%]
3. 2. External Ua actual value - Ra as L - u/3 of Actual speed value
4. EMF actual value from actual speed value
5. 1: Internal EMF actual value
6. 2: External Ua actual value
7. 3: External EMF actual value
8. 4: EMF actual value from actual speed value

Notice: The signal source for the external EMF value must be set here.

The factory setting (5228)T (internal EMF) must only be left unchanged when p51.102 = 3.

When p51.102 = 1, this setting leads to the current being controlled.
Adaption Armature current controller

Fig. 3-97 6853 – Armature current controller adaptation
3 Function diagrams

3.12 Armature circuit control

Fig. 3-98 6854 – Armature circuit model parameters

Explanations:
- Ra ... Resistance of the armature circuit of the motor
- La ... Inductance of the armature circuit of the motor
- Rs ... Resistance of the interface transformer/smoothing reactor in 12-pulse mode
- Ls ... Inductance of the interface transformer/smoothing reactor in 12-pulse mode
- Lk ... Commutation inductance

Non-linearity factor: The percentage value to which the inductance drops at a current dictated by p50100
(for non-current-dependent inductances, this value is 100%)

<table>
<thead>
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<th>1</th>
<th>2</th>
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<td>Armature circuit control - Armature circuit model parameters</td>
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<td>v 1.4.1</td>
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</tbody>
</table>
Fig. 3-99 6855 – Armature current regulation

<1> p50153[D] <> 2: Set I component to 0
p50153[D] = 2: Set I component to precontroller value
<2> Hold I component in pos. direction
<3> Hold I component in neg. direction

1,000 µs

[1020.7]
[1721]
**Function diagrams**

3.12 Armature circuit control

**Fig. 3-100** 6858 – Gating unit characteristic linearization

**Description** of function "Linearization of gating unit characteristic":

Input variable: Control voltage (-100% to +100%)

Output variable: Firing angle (0° to 180°) that is required so that, with B6 switching and a non-pulsating current, the output voltage changes linearly with the input variable.

An arccos function forms the relationship between the input and output variable.

Use of the "Linearization of gating unit characteristic" function:

This function is only used for internal Siemens applications (THYRISIEM® excitation equipment).

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3 Function diagrams

3.12 Armature circuit control

Fig. 3-102 6862 – State limits

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<td>6862</td>
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DO: DC_CTRL

Armature circuit control - State limits

SIEMENS fp_6862_96_VSD Function diagram

2013-05-14 v 1.4.1 SINAMICS DCM

- 6862 -
3 Function diagrams

3.12 Armature circuit control

Fig. 3-103 6865 – Simulation mode/thyristor check/commutation monitoring

Simulation mode

Thyristor check

Commutation monitoring

Auto-rev simul p51840

Thyr_diag_mode p50830

Commut_monit STW p51580

F60061 Thyrs_test unsucc

F60300 Commut_failure

SINAMICS DCM
List Manual (LH8), 02.2015, 6RX1800-0ED76
3 Function diagrams
3.12 Armature circuit control

Line-dependent EMF reduction

- Minimum
- p50285[D] (0.00 s)
- p50286[D] (110.0 %)
- p50287[D] (0.0 %)
- p50288[D] (100.0 %)
- EMF_setp_red_outp [%]
- p50289[C] (100)

8000 μs
[1020.7]
3.13 Field circuit control

Function diagrams

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3 Function diagrams

3.13 Field circuit control

Determination of EMF setpoint

Automatic field current reduction, if EMF is too high for braking operation

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3.13 Field circuit control

Fig. 3-106 6902 – Armature voltage/EMF actual value sensing

- Armature voltage of the slave when power units are connected in series
- Ctrl line cont
- Conversion to volts
- Conversion to volts
- Effective gain
- x = 0,1
- y = 1,2
- Scan, values Ua
- Mean value between 2 firing pulses

1. Only effective if p51854 > 0
   The following applies for p51854 = 0:
   - x = 1 or 2:
     The device must be restarted.
   - x = 1:
     Only effective if p51854 = 0

2. Only effective if p51854 = 0

- RMS value over 6 cycles
- Mean value

- p1855
- p1856
- p50098
- p50110(D)
- p5104
- 10ms
- ia
- EMF act
- EMF act abs avg [%]
- EMF act avg [%]
- EMF act sign [%]
- Ua act abs [%]
- Ua act signed [%]
- Ua act rms [%]
- P. act ohm load [%]
- U_out 1C/1D [%]

- Ua
- La
- Mot P supp avg [%]
- [6861.6]
- [6851.6]
- [6850.7]
- [6851.6]
- [6850.7]
- [6852.6]
- [6862.6]

- 250 μs
- [1020.7]
Fig. 3-107 6905 - Field current setpoint limitation

Field circuit control - Field current setpoint limitation

- 6905 -
Adapation Field current controller

If ctr set [%] 52286

If ctr act [%] 52285

Adapation to non-linear inductances

Adapation to non-linearity of gating unit

100%

100%

Kp [6910]

Tn [6910]

DO: DC_CTRL

Field circuit control - Field current controller adaption
3 Function diagrams

3.13 Field circuit control

Field current of parallel slaves [9350.5]

If ctr L ctr sig s
p50092 [0]
[9315.0]

Stationary state excitation:
Switch in
p50298 [0]

Operating mode for the field
p50082
p50097

Mot fl input sel
p50263(D) (1)

Field characteristic
p50120(D) up to
p50139(D)

Current controller field

Pre-control field

p50116(D)
L_field circuit
p50129(D)
R_field circuit
p50197(D)
L_field red fact
p50142(D)
Field prec sel T
p50260(D) (0)

Set setpoint 0
p53193.2

Inhibit controller
p52265

Setpoint

0%

Actual value

Fig. 3-109 6910 – Field current regulation

IFBBB96

6,1$0,"&6'&0 Y

W

&XUUHQWFRQWUROOHU

ILHOG

&XUUHQWFRQWUROOHU

ILHOGUHGIDFW

&XUUHQWFRQWUROOHU

ILHOGFLUFXLW

&XUUHQWFRQWUROOHU

ILHOGFLUFXLW

&XUUHQWFRQWUROOHU

ILHOGFLUFXLW
3 Function diagrams

3.13 Field circuit control - Actual field current value sensing

Fig. 3-110 6912 – Actual field current value sensing

Field circuit control - Actual field current value sensing

1 2 3 4 5 6 7 8

DO: DC-CTRL
Se: 6912, ste: 980

Function diagram

SINAMICS DCM

- 6912 -
Field circuit control - Field gating unit

Fig. 3-111 6915 – Field gating unit
Fig. 3-112
6920 – Field reversal

SINAMICS DCM
List Manual (LH8), 02/2015, 6RX1800-0ED76

8,000 μs
[1020.7]

CUD
CUD DO 0 t_del
p50775 (0)

CUD DO inv
p50770[0] (0)

X177
1C1

3C

3D

k21

 6ZLWFKRQILHOGFRQWDFWRU
SRVLWLYHILHOGGLUHFWLRQ
)LHOGUHYVLJV
S>&@


1D1

)RUZDUG
GLUHFWLRQ
%LQDU\RXWSXW
&O
>@

S


U

19

K20

+

+

)LHOGUHYEUVLJV
S>&@


+

CUD DO 1 t_del
p50776 (0)

&RQWUROORJLF
IRU
ILHOGUHYHUVDO

CUD DO inv
p50770[1] (0)

+

%LQDU\RXWSXW
&O
>@



[6805.2]
r53195.02
n_act invert

20

K21
+

%DFNZDUG
GLUHFWLRQ

S
U

K20

M

k20

 6ZLWFKRQILHOGFRQWDFWRU
QHJDWLYHILHOGGLUHFWLRQ

+

K21

+

+

+

V1

Rs

*)

[6810.1]
M

+
+

+

+

23

p50092[0]
0.0...10.0 [s]

If < If_min
[8025.5] r53026.00

S>@ V 
:DLWWLPHIRUILHOGGHFUHDVHEHIRUHRSHQLQJWKHFXUUHQWILHOGFRQWDFWRU
S>@ V 
:DLWWLPHEHIRUHDFWLYDWLRQRIQHZILHOGFRQWDFWRU

If_act < If_set x

[8025.5] r53026.01

S>@ V 
:DLWWLPHEHIRUHHQDEOLQJRIILHOGILULQJSXOVHV
S>@ V 
:DLWWLPHDIWHUILHOGUHEXLOGLQJEHIRUHHQDEOLQJRIDUPDWXUHILULQJSXOVHV

)OG5HYQBDFWVLJV
S>&@


[6805.3]
6XSSUHVVRUFLUFXLW

E ZLWKYDULVWRU

+

+

Rs

Rs =

:V
2
5V N ˖
9 %N 6,29EORFNYDULVWRU

V1

,ILHOGUDWHG
+


'2'&B&75/



+





+







ISBBB96'

791

 )LHOGUHYHUVDO



)XQFWLRQGLDJUDP

Y 6,1$0,&6'&0



3 Function diagrams

Rs

+

,ILHOGUDWHGA /

9

3.13 Field circuit control

$VXSSUHVVRUFLUFXLWZLWKYDULVWRU
FDQEHXVHGLIWKHIROORZLQJDSSOLHV

D ZLWKSURWHFWLYHUHVLVWRU


## 3.14 Power unit

### Function diagrams

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**3 Function diagrams**

3.14 Power unit

Fig. 3-113 6950 – Armature line analysis

- **Line offset s src**
  - p51847[0..5]
  - p51848[0..5]
  - p51849[0..5]
  - p51850[0..5]
  - p51851[0..5]

- **Line offset fixed**
  - p51845

- **Conversion to volts**
  - p51821[0]

- **Effective gain**
  - p51819[0]

- **Line analysis armature**
  - V_supp rated val
  - p50078[0]
  - V_line t_stabil
  - p50090
  - Arm line per no.
  - p50152[0]

- **Thyristor blocking voltage calculation**
  - p50166

- **Thy_block_calc act**

- **Ua/Uf scan_values [V]**
  - p5295[0..10]

- **V_thyr scan_values [V]**
  - p5295[11..100]

- **V_thyr scan_values [V]**

- **Thyr state**
  - p53148

- **Thyr block state**
  - p53147

- **250 µs**

- **[1020.7]**

- **Arm V_line U-V [%]**
  - r52301

- **Arm V_line V-W [%]**
  - r52302

- **Arm V_line W-U [%]**
  - r52303

- **Arm V_line avg [%]**
  - r52305

- **Arm _cvt V_line mms**
  - r50015

- **Arm f_line [%]**
  - r52306

- **erp line**
  - r50017[0]

- **V_line sc values [V]**
  - r52960[0..2]

- **Arm line ph offs**
  - r52965[0]

- **Arm line ph offs**
  - r52965[1]

- **Arm zero pos UV**
  - r52970

- **Arm zero neg UV**
  - r52971

- **Arm zero pos VW**
  - r52972

- **Arm zero neg VW**
  - r52973

- **Arm zero pos WV**
  - r52974

- **Arm zero neg WV**
  - r52975

- **Arm line zero dev**
  - r52960

- **<1> This parameter is only effective with the Control Module**

---

**Table 3.14 Power unit - Armature line analysis**

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</tbody>
</table>
Parameters r52295 and r52296 are scaled to the value "1.35 * p50078[1]" although they can assume (because of the B2H bridge) maximum values of approx. 0.9 * p50078[1].
3.14 Power unit

Function diagrams

- 6954 -

Power unit - Line monitoring

Fig. 3-115 6954 – Line monitoring

Line monitoring

- Line V_und thresh p50351[D] -
- Line V_over thresh p50352[D] -
- V_under t_del p50361[D] -
- Line V_over t_del p50362[D] -
- Ph_fail thresh p50353[D] -
- f_line minthresh p50363[D] -
- f_line maxthresh p50364[D] -

- F60004 Arm ccl ph_fail det -
- F60005 Field ccl ph_fail det -
- F60006 Line monit U_under -
- F60007 Line monit U_over -
- F60008 f(Line < f(Line min -
- F60009 f(Line > f(Line max -

- f3145.0 Arm V_over -
- f3145.1 Arm V_under -
- f3145.2 Arm f_over -
- f3145.3 Arm f_under -
- f3145.4 Arm ph fail -
- f3145.5 Field V_over -
- f3145.6 Field V_under -
- f3145.7 Field f_over -
- f3145.8 Field f_under -
- f3145.9 Field ph fail -
- f3145.10 Arm supp sys OK -
- f3145.11 Field supp sys OK -
- f3145.12 Ph rot CW -
- f3145.13 Line symm -
Fig. 3-119 6965 - Adaptation to external power unit (Control Module)

V transf ext ratio p51819[00...01]
Arm V rated p51820
Meas cab conn p51821[00...01]
Arm I rated p51822
V_load Ia rated p51823
I_transf config p51824
PU typ p51825
Pulse chop I p51826[00...02]
Htsk temp typ p51830
Fuse mon act p51831[00...04]
Fan mon config p51832
Ext F mode p51833
Fan relay sig s p51834

See FP6950
See FP6902
Device Ua rated r50071
Device Ia rated r50072[0]
See FP6850
4Q PU [63149.0 [6840.5]
See FP6880
See FP68048
See FP6957
See FP68049

1 2 3 4 5 6 7 8
DO: DC_CTRL
Power unit - Adaptation to external power unit (Control Module)

SIEMENS fp_6965_96_VSD Function diagram - 6965 -
2013-05-14 v 1.4.1 SINAMICS DCM
Control of CCP

- CCP V_set thr up
- C pre-ch V_set
- CCP turn-off cmd
- P2P op mode
- P2P/CCP bus term
- CCP state
- CCP I2t Chopper 1 [%]
- CCP I2t Chopper 2 [%]
- CCP command
- P0799 P2P/CCP diag
- F60320 CCP not functional
- A60321 CCP not functional

<1> p05790 = 6 : Communication with SIMOREG CCP
3.15 Technology controller

Function diagrams

7958 – Control (r0108.16 = 1)
Fig. 3-121 7958 – Control (r0108.16 = 1)

Technology controller - Control (r0108.16 = 1)

1. The P- and D-component can be switched off respectively by entering a zero.
2. The P- and D-component can be switched on and off respectively by entering a one.
3. The default value for the sampling time is p1020 (1000 ms).
4. Component 1 is the P-component, and Component 2 is the D-component in this signal. The component steps only when p1023 and p1024 are not set to zero.

- Component 1
  - P-component
  - D-component

- Component 2
  - P-component
  - D-component

- Component 3
  - P-component
  - D-component

- Component 4
  - P-component
  - D-component

- Component 5
  - P-component
  - D-component

- Component 6
  - P-component
  - D-component

- Component 7
  - P-component
  - D-component

- Component 8
  - P-component
  - D-component

- Component 9
  - P-component
  - D-component

- Component 10
  - P-component
  - D-component
### 3.16 Signals and monitoring functions

#### Function diagrams

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</table>
Fig. 3-122 8020 – Messages (part 1)

Set/act 1 thresh
0.00...200.00 [%]
p50388[D] (3.00)

Set/act 2 thresh
0.00...200.00 [%]
p50376[D] (3.00)

Set/act 1 OFF
0.0...100.0 [s]
p50390[D] (3.0)

Set/act 2 OFF
0.0...100.0 [s]
p50378[D] (3.0)

n(set,smooth)
P50590

p50591

n(act)

Ref_speed thresh
0.00...200.00 [%]
p50373[D] (100.00)

Ref_speed l OFF
0.0...100.0 [s]
p50375[D] (3.0)

n(act)

p50596

p50597

p50592

p50593

n(set,smooth)

p50598

p50599

p50600

p50601

n(act)

p50602

p50603

n(act)

p50604

n(act)

p50605

n< n_min thresh
0.00...200.00 [%]
p50377[D] (0.50)

n< n_min hyst

n< n_min

0.00...200.00 [%]

4,000 µs

[1020.7]

F60031
Excessive set/act dev

r53025.0
Dev 1 less thresh

r53025.1
Dev 1 less inv

r53025.2
Dev 2 less thresh

r53025.3
Dev 2 less inv

cmpr_set rch

cmpr_set rch inv

n< n_min

n_decel rch

n_decel rch inv

1

1

1

1
3.16 Signals and monitoring functions

**Fig. 3-123** 8025 – Messages (part 2)

Limit monitor if < lim

Limit monitor if > lim

Field current threshold lim

Actual value at input of field current controller

Seepoint at the input of the field current controller

Limit monitor if < lim

Actual value at input of field current controller

Seepoint at the input of the field current controller

Field current threshold lim

Actual value at input of field current controller

Seepoint at the input of the field current controller

Seepoint at the input of the field current controller
3 Function diagrams

3.16 Signals and monitoring functions

For r50012 and r52051, the following applies:

Value = temperature: for KTY84 (p50490=1), PT100 (p50490=6), NTC thermistor (p50490=7) or PT1000 (p50490=8)

Value = 0: for PTC thermistor (p50490 = 2,3,4,5)

A...KTY84 (p50490=1), PT100 (p50490=6), NTC thermistor (p50490=7) or PT1000 (p50490=8)
B...PTC thermistor (p50490 = 2,3,4,5)

Lay shielded cable, with shield connected to ground at both ends

Terminal 54 (sense) is used for compensating cable resistances; for this, the cable from terminal 53 to the temperature sensor and the cable from connection 54 to the temperature sensor should be around the same length.

If terminal 54 (sense) is not required, then terminal 54 must be connected to terminal 55.

---

**Fig. 3-124 8030 – Motor interface (part 1, X177.53/54/55)**

**CUD**

- X177.53
- X177.54
- X177.55

**SMC30**

- X531.4
- X531.3

**Mot temp sensor**

- p50490 (0)

**Mot temp**

- r52012

**Mot temp out [%]**

- r52051

**Alarm temperature**

- 0...200 °C
- p50491 (0)

**Shutdown temperature**

- 0...200 °C
- p50492 (0)

---

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Fig. 3-125
8035 – Motor interface (part 2)

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Fig. 3-126 8038 – I2t monitoring, motor

3 Function diagrams
3.16 Signals and monitoring functions

Device Ia rated p50072[1]

Ia act 6 cyc [%]
[r52109 [6851.6]

 Mot I2t L_cont p50113[0]

I2t monitoring of motor

Mot T therm p50114[0]

Mot I2t L_sit behav p50149

Calc mot temp rise [%]
[r52309]

Temp rise calc [r50014[0]

A

A>B

A60037 I2t A excess mot temp rise

100 % B

F60137 I2t F excess mot temp rise

110 % B

<1> Value = 0: Monitoring switched off, i.e. calculated motor temperature rise = 0
3 Function diagrams
3.16 Signals and monitoring functions

SINAMICS DCM
810
List Manual (LH8), 02/2015, 6RX1800-0ED76

- 3.16 -

Fig. 3-128 8042 – Power unit I2t monitoring

1: Option Z04, Z05, Z07, Z13, Z15
2: Option Z04, Z05, Z07, Z17, Z13 and Z15
3: These parameters are only updated for option Z04, Z05, Z07, Z13, Z15.
4: Twice for option Z04, Z05, Z07, Z13, Z15
5: Three parameters are only updated for option Z04, Z05, Z07, Z13, Z15.
6: Beta is set in limits
7: Beta is set in limits
8: Beta is set in limits

- 3.16 -

Fig. 3-128 8042 – Power unit I2t monitoring
Fig. 3-129  8044 – Field current monitoring

Field PU op mode p50082 (2)

Ext field monit p51839 (0)

if_mod [\%] p52266 [6910.5]

2% of r50073[1]

Field PU op mode p50082 (2)

If_mon set_fact 1...100 [%]
p50396[40] (50)

If_mon F_I del 0.02...60.00 [g]
p50397[0] (0.50)

&

T 0

ON delay

F60105 If_mon fault field cct

l_field mon sig s p50265 [C] [1]

if_mod act [%] p52265 [6910.4]

A > B

&

1

Ext field monit p51839 (0)

A ≦ B

if_mod [%] p52266 [6910.5]

if_mod sig s p50692 [C] [0]

Oper_display r50000 < 0.9

[2651.5]

&

F60045 Standst_field in op

DO: DC_CTRL

Signals and monitoring functions - Field current monitoring

SIEMENS

fp_8044.96_VSD

Function diagram

2013-05-14 v 1.4.1

SINAMICS DCM

- 8044 -
Fig. 3-130  
8045 – Device fan, operating hours counter

Operating hours counter  
Device fan

- Dev fan serv life p5096[0...4]
- Dev fan reset h p5096[20...4]

Fan speeds
- r50030[0]
- r50030[1]
- r50030[2]
- r50030[3]

Fan ON
- r53135.0

Fan operating hours
- r5096[0]
- r5096[1]
- r5096[2]
- r5096[3]
- r5096[4]

A60165  
Fan end serv life reach

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</table>
### Blocking protection

- Stall pr act sig s
- Stall prot thresh p50356(D)
- Sel act abs [%]
- Tacho_mon thresh p50357(D)
- EMF act avg [%]
- n_ctr act sm [%]

#### Tacho loss monitoring
- Def tacho_monit error
- Tacho loss [6905.7]

#### Monitoring for armature circuit interruption
- Alpha G lim rch [53190.7]
- A_l_act int abs [%] 1%

#### Monitoring for field circuit interruption
- Alpha G lim rch [53191.0]
- if_act int abs [%] 1%

### Monitoring for important parameter settings
- F60055 Field charact not valid
- F60056 Important param not set
- F60058 Par not consistent
3 Function diagrams
3.16 Signals and monitoring functions

**Fig. 3-132** Device fan (DC Converter)

- **Power Interface**
  - Fan ON
  - CUD DO 0 sig s
  - Digital output, terminal 19 [2055.5]
  - Fan ON inv
  - Dev fan 1 run-on
  - Oper_display
  - r50000 < 0.9 [2651.5]
  - Temp 1:
    - r52055(0)
    - [8048.3]
    - Temp 2:
      - r52055(11)
      - [8048.3]
  - Temp 3:
    - r52056(2)
    - [8048.3]
  - l2t thr temp rise [%]
    - r52310
    - [8042.6]
  - 15s
  - T
  - 0

- **Fan speed sensing**
  - Fan speeds in rpm
    - r50030(0)
    - r50030(1)
    - r50030(2)
    - r50030(3)

- **Fan monitoring**
  - n < threshold
  - T
  - 0

- **Faults**
  - A60166
    - Alarm n_fan too slow
  - F60167
    - Fault n_fan too slow

- **Digital output**
  - M
  - 19
  - 23
  - 4U1
  - 4V1
  - 4W1

**Behavior fan ctrl**
- 0% corresponds to 0°C, 100% corresponds to 100°C

**Status**
- Status = 1: OK
- If no fan is present: Fan status = 1
- If no fan is present: Fan speed = 0
- The delay time depends on the power unit

**DO: DC_CTRL**

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</table>
Temperature sensor 1

Temperature sensor 2

Temperature sensor 3

Temperature sensor on the control module

Supply voltage

Depending on the MLFB, the devices are equipped with one or more temperature sensors - see r52049.0...3.

Temperature sensors 1, 2, and 3 may be attached to the following measuring points:
- Main heat sink
- Field heat sink
- Device fan supply air
- Device fan exhaust air

Note:
The display parameters for temperature sensors that are not present return an invalid value (e.g. -200 °C).
The temperature sensors are monitored for wire breaks and F60096 is triggered if necessary.

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<td>8048 - Device-internal monitoring functions</td>
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<td>Temperature sensor on the CUD module</td>
<td>8048 - Device-internal monitoring functions</td>
<td>8048 - Device-internal monitoring functions</td>
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Fig. 3-133

3.16 Signals and monitoring functions

SINAMICS DCM
3.16 Signals and monitoring functions

Function diagrams

Fig. 3-135 8050 – Trend recorder function
If a power failure occurs during operation (e.g. due to a blown fuse, defective thyristor, etc.):
- Sample values from line voltages
- Sample values from armature voltage (Ua)
- Sample values from armature current (Ia)
- Armature firing times
- Armature firing angle
- Fired armature thyristors

- Reason for torque direction
- Detailed information on faults
- Detailed information on inverter shoot-through
- Medium load
  (actual current value, duration)
  of each individual thyristor
- Information on changes to important parameters, software updates, etc.
- Detailed information on internal errors

If each time a fault occurs:
Information -> diagnostics file

Each time an inverter shoot-through occurs:
Information -> diagnostics file

Once per hour:
Memory -> diagnostics file

After each action:
Information -> diagnostics file

Each time an internal error occurs:
Information -> diagnostics file

Mem_card rem stat
09401
p09400 (0)

Diagnostics file on the memory card

Diagnostics file
Fig. 3-137  8054 – Internal diagnostics

3 Function diagrams
3.16 Signals and monitoring functions

Management of power unit properties
- F60068 Calib_val PU incorr
- F60063 Incorr AI/AV calib_values
- r50825[0...29] PU arm comp val
- r50826[0...15] PU field comp val

Management of properties of electronics module
- r50829[0...55] CUD calib. val
- r50063[0] CUD position
- r50063[1] CUD variant

Internal diagnostics
- r50827 Int diag

Communication
- F60062 Comm err to V_sens
- r50836[0...3] V_sens comm_err

Software version
- r50060[0] Version external
- r50060[1] Version internal
- r50060[2] DSAC Bootloader
- r50060[3] BIOS
- r50060[4] Config EEPROM
- r50060[5] Base system
- r50060[6] DC MASTER
- r50060[7] TMS
- r50060[8] TMS image
- r50060[9] TMS bootloader
- r50060[10] TMS bootloader im
- r50060[12] In-plant info
- r50060[13] DCC version
- r50060[14] FBLOCKS version

Actual value acquisition
- r529210...4 Meas res ASIC1 raw
- r529220...4 Meas res ASIC2 raw
- r529230...4 Meas res I_act raw

250 μs

Armature gating unit
- r52980 Cause arm fir plus
- r52981 Cause M_dir
- r52982 Ia h0 signal
- r52983 Thy_code

Monitoring of computing time capacity utilization
- A60098 Sys utilization high
- F60099 Sys utilization too high

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Signals and monitoring functions - Internal diagnostics
2013-05-14 v 1.4.1
3.17 Faults and alarms

Function diagrams

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<td>Fault/alarm configuration</td>
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3.17 Faults and alarms

Fig. 3-138 8060 – Fault buffer

LED "RDY" [= red for fault]
Act fault code 02131
0 = "No fault present"
Act fault val 03131

Fault times
Fault code Fault value Fault time "active" Fault time "inactive" Fault caused by drive object Component number Fault Diagnostic attributes Fault

Fault 1
r0945[0] r0949[0] [12] [12]
Fault 2
r0945[1] r0949[1] [12] [12]
Fault 8

1. Acknowledged fault
Fault
Fault 1
Fault 2
r0945[56] r0949[56] [12] [12]
Fault 7
r0945[63] r0949[63] [12] [12]
Fault 8
r0945[63] r0949[63] [12] [12]

Faults acknowledgment

Faults
Current fault

Faults acknowledged

Fault code

Fault value

Fault time "active"

Fault time "inactive"

Fault caused by drive object

Component number Fault

Diagnostic attributes Fault

Fault reactions to sequence control [2610]

Fault pres 02139.03 [2548.2]
Fault
Mfg ZSW global Group fault pres 03114.11
Fault buff change [8065.6]
Fault buff change 00944

In 16 bit counter, freewheeling

Outgoing fault
Fault acknowledged

Incoming fault
Fault

Counter 16 bits Fault cases qty p00952

Clear fault buffer (0945 = 0 r0947 = 0 r0948 = 0 r0949 = 0 r2109 = 0 r2130 = 0 r2133 = 0 r2136 = 0 r3115 = 0 r3120 = 0 r3122 = 0)

<1> This fault is overwritten by "more recent" faults (except "safety faults").

<2> Refer to "Fault buffer - Saving on switching off" in the List Manual.

<3> The buffer parameters are cyclically updated in the background (refer to status signal in r2139).

DO: All Objects
Faualts and alarms - Fault buffer

SIEMENS fp_8060_96_VSD Function diagram
2013-05-14 v.1.4.1 SINAMICS DCM - 8060 -
3 Function diagrams

3.17 Faults and alarms

![Diagram of SINAMICS DCM 822 List Manual (LH8), 02/2015, 6RX1800-0ED76]

Fig. 3-139 8065 – Alarm buffer

- Actual alarm code
  - r02132
  - 0 = "No alarm present"

- Alarm code
  - r2122[0]
  - r2124[0][132]
  - r2134[0][132]

- Alarm value
  - r2123[0][ms]
  - r2145[0][d]

- Alarm time "active"
  - r2125[0][ms]
  - r2146[0][d]

- Alarm time "inactive"
  - r2125[1][ms]
  - r2146[1][d]

- Component number
  - r3121[0]
  - r3123[0]

- Diagnostic attributes
  - r3121[1]
  - r3123[1]

- Operating time
  - [2546.3]
  - [2548.3]

- Alarm 1 (oldest)
  - [2512] [2513]
  - [2514]

- Alarm 2
  - [2515] [2516]
  - [2517]

- Alarm 3 (most recent)
  - [2518]

- Alarm history
  - r2122[0]
  - r2124[0][132]
  - r2134[0][132]
  - r2125[0][ms]
  - r2145[0][d]
  - r2125[1][ms]
  - r2146[1][d]
  - r3121[0]
  - r3123[0]
  - r3121[1]
  - r3123[1]

- Alarm buffer
  - [2548.3]
  - [2549.3]

- Counter 16 bits
  - Alarm counter
  - p2111 = 0: Alarm buffer is cleared

- POWER ON
  - [2546.3]
  - [2548.3]

- Fault buffer change [8060.8]
  - Fault/alarm buffer changes from other drive objects

- 16 bit counter, freewheeling
  - Alarm buffer change

- Sum buffer changed
  - [25120]

- 16 bit counter, freewheeling
  - [2546.3]
  - [2548.3]

- DO: All Objects
  - Faults and alarms - Alarm buffer

- Siemens
  - fp_8065_96_VSD
  - Function diagram

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3 Function diagrams

3.17 Faults and alarms

Fig. 3-140 8070 - Fault/alarm trigger word (r2129)

Fault/Alarm trigger setting

Fault/Alarm trigger word
(e.g. as trigger frequency for trace recordings)

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3.17 Faults and alarms

**Change fault reaction for a maximum of 20 faults**

- **Input**: Fault code
- **Output**: Fault reaction

**Change fault message type ↔ Alarm for a maximum of 20 faults/alarms**

- **Input**: Fault/alarm code
- **Output**: Fault/alarm type

**Change acknowledge mode for a maximum of 20 faults**

- **Input**: Fault code
- **Output**: Acknowledge mode

---

<1> With the factory settings, the fault reaction, acknowledge mode, and message type are preassigned in a meaningful way for all faults and alarms. Any changes can only be made in one individual value range, specified by SIEMENS, in each case. When changes to the message type are made, the additional information "creeps" from fault value r949 to alarm value r2124, or vice versa.
### 3.18 Data sets

#### Function diagrams

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<tr>
<td>8570 – Encoder Data Sets (EDS)</td>
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</table>
Example:
Switching Command Data Sets
CDS0 -> CDS1

- Bit: p0810 = "0"
  - CDS0 selected
  - r0836.0 = 0

- Bit: p0810 = "1"
  - CDS1 selected
  - r0836.0 = 1

CDS0 effective
r050.0 = 0

CDS1 effective
r050.0 = 1

Source
Copy CDS p0080(0) (0)

Destination
Copy CDS p0080(1) (0)

Start
Copy CDS p0080(2) (0)

CDS count p00170 (2)

CDS selected
r0836.0

CDS effective
r00050.0
### 3.18 Data sets

**Fig. 3-143** 8565 – Drive Data Sets (DDS)

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**DDS (Drive Data Set)**

- **EDS (Encoder Data Set)**
  - EDS (Encoder Data Set) for encoder 1
  - EDS (Encoder Data Set) for encoder 2

**DDS select**
- bit 0

**DDS count**
- value 0

**DDS selected**
- no DDS selected

**DDS selected**
- EDS (Encoder Data Set) selected

**DDS selected**
- no EDS (Encoder Data Set) selected

**DDS select bit**
- DDS select bit 1

**DDS count**
- value 1

**DDS selected**
- EDS (Encoder Data Set) selected

**DDS count**
- value 0

**DDS selected**
- no EDS (Encoder Data Set) selected

**DDS select bit**
- DDS select bit 0

**Copy DDS (DDS) to DDS (DDS)**
- copy DDS (DDS)

**Start DDS (DDS)**
- start DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)

**DDS (DDS)**
- DDS (DDS)
3 Function diagrams

3.18 Data sets

SINAMICS DCM

List Manual (LH8), 02/2015, 6RX1800-0ED76

Fig. 3-144 8570 – Encoder Data Sets (EDS)

<1> Encoder faults always relate to the Encoder Data Set that is currently active.

<2> EDS2 to EDS15 are usually not used because only one EDS is required for each encoder.

EDS count p00140 (1)

EDS0 - Encoder Data Set 0
p014[0] = Component number of Sensor Module
p040[0]
...
p0425[0]

EDS1 - Encoder Data Set 1

EDS15 - Encoder Data Set 15

EDS0 (Drive Data Set)

p0187[D] (enc 1 EDS number)
p0188[D] (enc 2 EDS number)

EDS for encoder 1
p0400[E]  E = p0187[D]
p0425[E]

EDS for encoder 2
p0400[E]  E = p0188[D]
p0425[E]

Assigned parameters:
- To position sensing for encoder n: [4704]
- To actual speed value sensing for encoder n: [4710] [4711]

F07502 Drv: EDS not config
F07510 Drv: Ident enc in DDS

<table>
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<th>5</th>
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<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: DC_CTRL</td>
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<td>Data sets - Encoder Data Sets (EDS)</td>
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<tr>
<td>SIEMENS</td>
<td>fp_8570_98_VSD</td>
<td>Function diagram</td>
<td></td>
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<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
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<td>- 8570 -</td>
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</table>
### 3.19 Communication between devices

**Function diagrams**

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<tr>
<th>Function Code</th>
<th>Description</th>
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<tr>
<td>9300</td>
<td>Peer-to-peer interface</td>
<td>830</td>
</tr>
<tr>
<td>9350</td>
<td>Parallel connection interface (part 1)</td>
<td>831</td>
</tr>
<tr>
<td>9352</td>
<td>Parallel connection interface (part 2)</td>
<td>832</td>
</tr>
<tr>
<td>9355</td>
<td>Parallel connection interface (part 3)</td>
<td>833</td>
</tr>
<tr>
<td>9360</td>
<td>Switchover of the power unit topology</td>
<td>834</td>
</tr>
</tbody>
</table>
Fig. 3-145 9300 – Peer-to-peer interface

**Parameters for peer-to-peer interface**

- **p50790 (0)**: Peer-to-peer ON/OFF
- **p50791 (5)**: Number of words (1…5)
- **p50793 (13)**: Baud rate
- **p50795 (0.000 s)**: Telegram monitoring time
- **p50799**: Peer-to-peer diagnostics parameters

**Com mon I del p50009**

**T**

1 = Telegram monitoring time expired

F6012 P2P t_monit expiried

**Note:**
The binector/connector converter is only active when the peer-to-peer interface is switched on (i.e. p50790 = 5)
3.19 Communication between devices

Fig. 3-146 9350 – Parallel connection interface (part 1)

- Management of the power unit topology
- Monitoring of slave nodes
- Par_IF node failure

**Field current of parallel slaves [6910.1]**

**Transmit data [9355.6]**

**Receive data [9352.3]**

**Par_IF bus addr p51806**

**Sync+**

**Sync-**

**Par_IF bus term p51809 (0)**

**Par_IF redund mod p51803**

**Par_IF PU qty p51802**

**PU topo pos p51800 (0)**

**Evaluation**

**Par_IF device qty p51810**

**PAR_IF diag info p51809**

**Par_IF act disp p51810**

**PI CAN diag info p51811**

**F60014 Par_IF t_monit expired**

**F60044 Par_IF node failure**

**1 = "Telegram monitoring time expired"**

**T 0**

**fp_9350_96_VSD**

**Function diagram**

**SINAMICS DCM**
3 Function diagrams

3.19 Communication between devices

Fig. 3-147 9352 – Parallel connection interface (part 2)

Receive data [9350.3]

From the current master

Word 1

Word 2

Word 3

to

word 16

Receive data

From bus address 1

Word 1

Word 2

Word 3

to

word 16

Receive data

From bus address 2

Word 1

Word 2

Word 3

to

word 16

Receive data

From bus address 16

Word 1

Word 2

Word 3

to

word 16

etc. for stations 3 to 16

Bit 0

Bit 15

4,000 µs

[1020.7]

DO: DC_CTRL

Siemens

fp_9352_96_VSD

Function diagram

Communication between devices - Parallel connection interface (part 2)

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Communication between devices - Parallel connection interface (part 3)

Fig. 3-148 9355 – Parallel connection interface (part 3)
CUD DO inv
p50770[0] (0)

X177

7RSBVZLWFKVBVUF
S


+

+
+

+
+

+

3RZHUXQLW
WRSRORJ\

S
U

U1
V1
W1

k31-1

 DFWLYDWHSRZHUXQLW
WRSRORJ\


[9360.6]

%LQDU\RXWSXW
&O
>@

19

SINAMICS
DCM 1

K30

+

SINAMICS
DCM 2

0DVWHU
Topo_sw t_stab
p51792

Topo_sw fdbk t_sig
p51793

Topo_sw mode 2
p51794

Topo_sw pos 2
p51795

CUD DO 1 t_del
p50776 (0)

CUD DO inv
p50770[1] (0)

k30-1

C

3RZHUXQLW
WRSRORJ\

S
U



%LQDU\RXWSXW
&O
>@

)
3DUB,)QRGHIDLOXUH

6ODYH

p51800=21
p51795=31

+

 DFWLYDWHSRZHUXQLW
WRSRORJ\

&RQWUROORJLFIRUFKDQJHRYHU
RIWKHSRZHUXQLWWRSRORJ\

9360 – Switchover of the power unit topology

CUD
CUD DO 0 t_del
p50775 (0)

20

&XUUHQWVHWSRLQW
7RUTXHGLUHFWLRQ
%,&2V

p51800=22
p51795=32

3DUDOOHO
LQWHUIDFH

D

C

D

K31

+

+

M

+
+

+

+

23

+

+

K30

P24_S

M

+

7RSBVZIGENVBVUF
S

SINAMICS DCM
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2SWLRQ6

9

U

=

11

K31

k31-2

=
'ULYHGDWDVHWFKDQJHRYHU UHFRPPHQGHG
''6VHOHFWELW

S>&@
[9360.2]


'2'&B&75/









U





ISBBB96'

 6ZLWFKRYHURIWKHSRZHUXQLWWRSRORJ\



53312.0

)XQFWLRQGLDJUDP

Y 6,1$0,&6'&0

[8565.3]



U2
V2
W2

3 Function diagrams

>@
Topo_sw t_stab
p51792

3.19 Communication between devices

Fig. 3-149

834

wV


### 3.20 Terminal Module 15 for SINAMICS (TM15DI/DO)

**Function diagrams**

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Page</th>
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<tr>
<td>9400</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 7)</td>
<td>836</td>
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<tr>
<td>9401</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 15)</td>
<td>837</td>
</tr>
<tr>
<td>9402</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 16 ... DI/DO 23)</td>
<td>838</td>
</tr>
</tbody>
</table>
Fig. 3-150 9400 – Digital inputs/outputs, bidirectional (DI/DO 0 ... DI/DO 7)

<1> The wiring represented by a dashed line applies for use as a digital output (p4028.x = 1). In this case, the terminal block must be supplied (L1+/M1).
3 Function diagrams

3.20 Terminal Module 15 for SINAMICS (TM15)

Fig. 3-151 9401 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 15)

- The wiring represented by a dashed line applies for use as a digital output (p4028.x = 1). In this case, the terminal block must be supplied (L2+M2).

Table: Terminal Module 15 (TM15) - Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 15)

<table>
<thead>
<tr>
<th>DO: TM15DI_DO</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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</tbody>
</table>

Note on 24 VDC to the next device:
+24 V
X524.+
X524.+
0 V
X524.M
X524.M
+24 V
X521.1
L2+
+24 V
X521.2
DI/DO 8
DI/DO 15
DI/DO 15
M
5 V

Related configuration:
TM15D Di stat inv
p4023
TM15D Di status
p4022
DI/DO 0 (X521.2)
-04023.08
DI/DO 15 (X521.9)
-04022.15

SIEMENS
fp_9401_98_VSD
Function diagram
-9401-

- SINAMICS DCM
- SINAMICS DCM
- SINAMICS DCM
Fig. 3-152  9402 – Digital inputs/outputs, bidirectional (DI/DO 16 ... DI/DO 23)

The wiring represented by a dashed line applies for use as a digital output (p4028.x = 1). In this case, the terminal block must be supplied (L3+/M3).

DO: TM15DI_DO

<p>| | | | | | | | |</p>
<table>
<thead>
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</table>

Function diagrams

3.20 Terminal Module 15 for SINAMICS (TM15DI/DO)
### 3.21 Terminal Module 31 (TM31)

**Function diagrams**

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<td>9550</td>
<td>Digital inputs, electrically isolated (DI 0 ... DI 3)</td>
<td>840</td>
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<tr>
<td>9552</td>
<td>Digital inputs, electrically isolated (DI 4 ... DI 7)</td>
<td>841</td>
</tr>
<tr>
<td>9556</td>
<td>Digital relay outputs, electrically isolated (DO 0 ... DO 1)</td>
<td>842</td>
</tr>
<tr>
<td>9560</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)</td>
<td>843</td>
</tr>
<tr>
<td>9562</td>
<td>Digital inputs/outputs, bidirectional (DI/DO 10 ... DI/DO 11)</td>
<td>844</td>
</tr>
<tr>
<td>9566</td>
<td>Analog input 0 (AI 0)</td>
<td>845</td>
</tr>
<tr>
<td>9568</td>
<td>Analog input 1 (AI 1)</td>
<td>846</td>
</tr>
<tr>
<td>9572</td>
<td>Analog outputs (AO 0 ... AO 1)</td>
<td>847</td>
</tr>
<tr>
<td>9576</td>
<td>Temperature evaluation KTY/PTC</td>
<td>848</td>
</tr>
<tr>
<td>9577</td>
<td>Sensor monitoring KTY/PTC</td>
<td>849</td>
</tr>
</tbody>
</table>
Fig. 3-153 9550 – Digital inputs, electrically isolated (DI 0 ... DI 3)

<1> When using electrical isolation, leave out the terminal jumper and connect the load current supply (represented as a dashed line).

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>DO: TM31</td>
<td><strong>SIEMENS</strong></td>
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<tr>
<td>Terminal Module 31 (TM31) - Digital inputs, isolated (DI 0 ... DI 3)</td>
<td>fp_9550_96_VSD</td>
<td>Function diagram</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
<td>- 9550 -</td>
<td></td>
</tr>
</tbody>
</table>
3 Function diagrams

3.21 Terminal Module 31 (TM31)

Fig. 3-154 9552 – Digital inputs, electrically isolated (DI 4 ... DI 7)

<1> When using electrical isolation, leave out the terminal jumper and connect the load current supply (represented as a dashed line).

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>DO: TM31</td>
<td>24 VDC to the next device</td>
<td>X524. +</td>
<td>X524. +</td>
<td>X524.M</td>
<td>M</td>
<td>X524.M</td>
<td>M</td>
</tr>
<tr>
<td></td>
<td>+24 V</td>
<td></td>
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<tr>
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<td>1</td>
<td>Simulation on</td>
<td>r04021.4</td>
<td>p04095.4</td>
<td>TM31 DI status inv</td>
<td>TM31 DI status</td>
<td>04023</td>
</tr>
<tr>
<td></td>
<td>24 V</td>
<td>X530.1</td>
<td>DI 4</td>
<td>04023.04</td>
<td>Di 4 (X530.1)</td>
<td>04022.04</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>X530.2</td>
<td>DI 5</td>
<td>04023.05</td>
<td>Di 5 (X530.2)</td>
<td>04022.05</td>
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<tr>
<td></td>
<td></td>
<td>X530.3</td>
<td>DI 6</td>
<td>04023.06</td>
<td>Di 6 (X530.3)</td>
<td>04022.06</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>X530.4</td>
<td>DI 7</td>
<td>04023.07</td>
<td>Di 7 (X530.4)</td>
<td>04022.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>X530.5</td>
<td>M2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>X530.6</td>
<td>M</td>
<td></td>
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</tr>
</tbody>
</table>

<1> 24 VDC to the next device

p4099[0] (4.000.00 μs)

[1020.7]

---

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Fig. 3-155 9556 – Digital relay outputs, electrically isolated (DO 0 ... DO 1)

Terminal Module 31 (TM31) - Digital relay outputs, isolated (DO 0 ... DO 1)

- Normally Open (NO) contacts are indicated with a "NC".
- The relay contacts have a maximum load rating of 100 V DC, 240 W or 250 V AC, 2000 VA.

Diagram shows the connections for DO 1 and DO 0.

Note: These terminals may conduct voltage up to 250 V AC.
3 Function diagrams

3.21 Terminal Module 31 (TM31)

Fig. 3-156 9560 – Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)

<table>
<thead>
<tr>
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<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO: TM31</td>
<td>p4099[0] (4,000.00 µs)</td>
<td>p04023</td>
<td>p04022</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminal Module 31 (TM31) - Digital inputs/outputs, bidirectional (DI/DO 8 ... DI/DO 9)</td>
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</tbody>
</table>

<1> The wiring represented by a dashed line applies for use as a digital output (p4028.x = 1).

<2> Limitation of total output current for terminals X541.2, X541.3, X541.4, and X541.5 to 0.1 A (p4046 = 0) or 1 A (p4046 = 1).

<3> The total output current for the 24 V auxiliary power supply at terminals X540.1 to X540.8 and X541.1 is limited to 150 mA.

Incandescent lamps must not be connected to the 24 V auxiliary power supply.
<1> The wiring represented by a dashed line applies for use as a digital output (p4028.x = 1).

<2> Limitation of total output current for terminals X541.2, X541.3, X541.4, and X541.5 to 0.1 A (p4046 = 0) or 1 A (p4046 = 1).
<1> Differential input!
With a single-ended input signal, terminal X521.2 must be connected to reference potential M.

Caution:
The voltage between an input (X521.1 or X521.2) and ground must not exceed 35 V.
When a load resistor is connected (S5.0 closed), the voltage between the input terminals must not exceed 15 V.

<2> When p4056 = 2, 3, 5, the unit is mA.
When p4056 = 0, 4, the unit is V.

<2> TM31 AI type
p04056[0] (0)

20 mA
<2> TM31 WireBrkThresh
0.00...20.00 [mA] p04061[0] (2.00)
0..1000 [ms] p04062[0] (100)

20 mA
<2> TM31 AI module
-20.00...20.00 p04096[0] (0.000)

4 mA 4.5
<2> TM31 AI smooth
-20.00...20.00 p04096[0] (0.000)

<2> TM31 AI offset
-20.00...20.00 p04096[0] (0.000)

Voltage
Current
HSXW
Hardware
Smoothing
100 μs

Fig. 3-158  9566 – Analog input 0 (AI 0)

+/-20 mA
+/−10 V

X521.1
AI 0+
S5.0

X521.2
AI 0−
S5.1 [9568]

<1>

<2>

<3>

<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

Fig. 3-161  9566 – Analog input 0 (AI 0)

DO: TM31
Terminal Module 31 (TM31) – Analog input 0 (AI 0)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
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<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIEMENS</td>
<td>fp_9566_96_VSD</td>
<td>Function diagram</td>
<td>- 9566 -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Fig. 3-159  9568 - Analog input 1 (AI 1)

Voltage V [V]

Current S5.0 [9566]

Sampling Hardware Smoothing 100 µs

TM31 AI type p04056[1](4)

TM31 AI offset -20.000 ... 20.000 p04063[1](0.000)

TM31 AI inv s s p04067[1](0)

TM31 AI T. smooth 0.0 ... 1000.0 [ms] p04053[1](0.0)

TM31 AI window 0.0 ... 20.00 [%] p04068[1](0.0)

TM31 AI enable p04069[1](1)

Reference variables p2000...r2004

x1  y [x]
x2  y [x]
x1 * x2  100 [%]

<1> Differential input!
With a single-ended input signal, terminal X521.4 must be connected to reference potential M.
Caution: The voltage between an input (X521.3 or X521.4) and ground must not exceed 35 V.
When a load resistor is connected (S5.1 closed), the voltage between the input terminals must not exceed 15 V.

<2> When p4056 = 2, 3, 5, the unit is mA.
    When p4056 = 0, 4, the unit is V.

<3> y = x if |y - x| > p4068 otherwise y = y(old)

Table:

<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></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DO: TM31

Terminal Module 31 (TM31) - Analog input 1 (AI 1)

SIEMENS  fp_9568_98_VSD Function diagram

2013-05-14 v 1.4.1 SINAMICS DCM

- 9568 -
3 Function diagrams

3.2 Terminal Module 31 (TM31)

Fig. 3-160 - Analog outputs (AO 0 ... AO 1)

Reference variables
p2000...r2004

<3>

<1> When p4076 = 0, 2, 3, the unit is mA.
When p4076 = 1, 4, the unit is V.

<2> As regards the voltage output, the output voltage may be picked off between the following terminals:
AO 0 between X522.2 (reference potential) and X522.1, AO 1 between X522.5 (reference potential) and X522.4.
As regards the current output, the output current may be drawn between the following terminals:
AO 0 between X522.2 and X522.3, AO 1 between X522.5 and X522.6.

<3> The input signals are related to reference variable p2000 ... R2004 (100% = p200x).

DO: TM31

Terminal Module 31 (TM31) - Analog outputs (AO 0 ... AO 1)
Temperature sensor

KTY/PTC

X522 7

2 mA

X522 8

Hardware Smoothing 1 s

Software Smoothing 0.5 s

Resistance calculation

TM31 R_sensor

p04101

<1>

TM31 sensor type

p04100

<1>

PTC thermistor,
1,650-ohm threshold

Sensor resistance

[9577.2]

Measured temperature

TM31 F/A, thresh
-48...251 °C
p04102[0] (103)

A35920

TM: Error temp_sens ch0

<3>

Alarm not present

Alarm present

-300 °C

Alarm fault.

<2>

Due to wire break monitoring [9577.3], the maximum temperature that can be measured is limited to approx. 188.6 °C.

<3>

A value > 250 °C deactivates the alarm fault.

<4>

For KTY:

P4103=1 = output of the timer
always disabled (0)

For PTC:

P4103=0 = delay time = 0 s

A35211

TM: Temp A thresh ch0 rch

04104.00

04104.01

F35207

TM: Temp F/A thr ch0 rch

04105

Table:

<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>Function diagram</td>
<td>Siemens</td>
<td>9576 -</td>
<td>Terminal Module 31 (TM31) - Temperature evaluation KTY/PTC</td>
<td>fp_9576_98_VSD</td>
<td>2013-05-14</td>
<td>v 1.4.1</td>
</tr>
</tbody>
</table>
3 Function diagrams

3.2.1 Terminal Module 31 (TM31)

Fig. 3-162 9577 – Sensor monitoring KTY/PTC

Sensor resistance [9576.6] → 20 ohms

Sensor type KTY [9576.6]

p4100 = 1 Sensor type PTC [9576.6]

50 ohms

p4100 = 2

A35920 TM: Error temp_sens ch0
Alarm value = 2

1,630 ohms

A35920 TM: Error temp_sens ch0
Alarm value = 1

With the KTY84-130, the threshold value 50 ohms corresponds to a temperature of -140 °C.

With the KTY84-130, the threshold value 1630 ohms corresponds to a temperature of +180 °C.
3 Function diagrams

3.22 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>851</td>
</tr>
<tr>
<td>9626 – Temperature evaluation 1x2-, 3-, 4-wire (channel 0 ... 5)</td>
<td>852</td>
</tr>
<tr>
<td>9627 – Temperature evaluation 2x2-wire (channel 0 ... 11)</td>
<td>853</td>
</tr>
</tbody>
</table>
### Function diagrams

#### Terminal Module 150 (TM150)

**Fig. 3-164**

- **9626 – Temperature evaluation 1x2-, 3-, 4-wire (channel 0 ... 5)**

- **SINAMICS DCM**

- **List Manual (LH8), 02/2015, 6RX1800-0ED76**

- **DO: TM150**

- **SIEMENS**

<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>Terminal Module 150 (TM150) - Temperature evaluation 1x2-, 3-, 4-wire (channel 0 ... 5)</td>
<td>fp_9626_96_VSD</td>
<td>Function diagram</td>
<td>- 9626 -</td>
<td>14.02.2015</td>
<td>v 1.4.1</td>
<td>SINAMICS DCM</td>
<td></td>
</tr>
</tbody>
</table>
3 Function diagrams

3.22 Terminal Module 150 (TM150)

Temperature evaluation 2x2-wire (channel 0 ... 11)

<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: TM150</td>
<td>SIEMENS</td>
<td>fp_9627_96_VSD</td>
<td>Function diagram</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Terminal Module 150 (TM150) - Temperature evaluation 2x2-wire (channel 0 ... 11)

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
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- TM150 R_wire meas
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- TM150 R_wire meas
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  - p04108[0...5]

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- TM150 R_wire meas
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- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
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  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

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  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]

- TM150 meas method
  - p04108[0...5]

- TM150 R_wire meas
  - p04109[6...11]
3 Function diagrams

3.23 Basic Operator Panel 20 (BOP20)

3.23 Basic Operator Panel 20 (BOP20)

Function diagrams

9912 – Control word interconnection
### Interconnection of STW BOP (r0019)

<table>
<thead>
<tr>
<th>Signal</th>
<th>Meaning</th>
<th>Interconnection parameter</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 = Do not coast down, 0 = Coast down (OFF2)</td>
<td>p0844[0] = r0019.1</td>
</tr>
<tr>
<td>STW BOP.2</td>
<td>1 = No quick stop, 0 = Quick 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>I = 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>1 = Motorized potentiometer, higher</td>
<td>p1035[0] = r0019.13</td>
</tr>
<tr>
<td>STW BOP.14</td>
<td>1 = Motorized potentiometer, owner</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 is just an example and may be changed by the user.*
Faults and alarms

Content

<table>
<thead>
<tr>
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</tr>
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<tbody>
<tr>
<td>4.2 List of faults and alarms</td>
<td>870</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.1 Overview of faults and alarms

4.1.1 General information on faults and alarms

Fault/alarm displays

In the case of a fault, the drive signals the corresponding fault(s) and/or alarm(s).

The following methods are available for displaying faults and alarms:

- Display via the fault and alarm buffer for PROFIBUS.
- In online operation, display via the commissioning software.

Differences between faults and alarms

The differences between faults and alarms are as follows:

Table 4-1 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 initiated.</td>
</tr>
<tr>
<td></td>
<td>• Status signal ZSW1.3 is set.</td>
</tr>
<tr>
<td></td>
<td>• The fault is entered into the fault buffer.</td>
</tr>
<tr>
<td></td>
<td>How are faults removed?</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 into the alarm buffer.</td>
</tr>
<tr>
<td></td>
<td>How are alarms removed?</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>PROFIdrive</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>
</tbody>
</table>
| OFF1   | ON/ OFF    | Brake along the ramp-function generator down ramp followed by pulse inhibit | Closed-loop speed control (p50084 = 1)  
- n_set = 0 is input immediately to brake the drive along the ramp-function generator down ramp.  
- When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the closing time (p50088) expires.  
Zero speed is detected when the actual speed value falls below the speed threshold (p50370).  
Closed-loop torque control (p50084 = 2)  
- The following applies for closed-loop torque control:  
  Reaction as for OFF2. |
| OFF2   | COAST STOP | Internal/external pulse inhibit                | Closed-loop speed and torque control  
- Immediate pulse suppression, the drive “coasts” to a standstill.  
- Switching on inhibited is activated. |
| OFF3   | QUICK STOP | Brake along the OFF3 down ramp followed by pulse inhibit | Closed-loop speed control (p50084 = 1)  
- n_set = 0 is input immediately to brake the drive along the OFF3 down ramp (p50296).  
- When zero speed is detected, the motor holding brake (if parameterized) is closed. The pulses are suppressed when the holding brake’s closing time (p50088) expires.  
Zero speed is detected when the actual speed value falls below the speed threshold (p50370).  
- Switching on inhibited is activated.  
Closed-loop torque control (p50084 = 2)  
- Reaction as for OFF2. |
| STOP2  | -          | OFF2                                          | For SINAMICS DCM, these fault reactions have the same effect as for OFF2.                             |
| IASC/ DCBRAKE | - | -                              |                                                         |
| ENCODER | -          | -                                            |                                                         |
**Acknowledgment of faults**

The list of faults and alarms specifies how to acknowledge each fault after the cause has been removed.

**Table 4-3 Acknowledgment of faults**

<table>
<thead>
<tr>
<th>Acknowledgment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POWER ON</strong></td>
<td>The fault is acknowledged by a POWER ON (switch drive unit off and on again).&lt;br&gt;Note: If this action has not removed the fault cause, the fault is displayed again immediately after power up.</td>
</tr>
<tr>
<td><strong>IMMEDIATELY</strong></td>
<td>Faults can be acknowledged on one drive object (Points 1 to 3) or on all drive objects (Point 4) as follows:&lt;br&gt;1 Acknowledge by setting parameter:&lt;br&gt; p3981 = 0 → 1&lt;br&gt;2 Acknowledge via binector inputs:&lt;br&gt; p2103 BI: 1. Acknowledge faults&lt;br&gt; p2104 BI: 2. Acknowledge faults&lt;br&gt; p2105 BI: 3. Acknowledge faults&lt;br&gt;3 Acknowledge using a PROFIBUS control signal:&lt;br&gt; STW1.7 = 0 → 1 (edge)&lt;br&gt;4 Acknowledge all faults&lt;br&gt; p2102 BI: Acknowledge all faults&lt;br&gt; All of the faults on all of the drive objects of the drive system can be acknowledged using this binector input.&lt;br&gt;Note: &lt;br&gt;• These faults can also be acknowledged by a POWER ON.&lt;br&gt;• If the cause of the fault has not been removed, then the fault will continue to be displayed after acknowledgment.</td>
</tr>
<tr>
<td><strong>PULSE INHIBIT</strong></td>
<td>The fault can only be acknowledged when the pulses are inhibited (r0899.11 = 0).&lt;br&gt;The same options are available for acknowledging as described under acknowledge IMMEDIATELY.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.1 Overview of faults and alarms

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 --> p2147 = 0 is automatically set after execution.

- Delete fault buffer for a specific drive object:
  p0952 = 0 --> 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.
4 Faults and alarms

4.1 Overview of faults and alarms

4.1.2 Explanation of the list of faults and alarms

The data in the following example have 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" (Page 870) has the following layout:

- - - - - - - - - - - - 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>Message class:</td>
<td>Text of the message class (number according to PROFIdrive)</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></td>
<td>Fault value (r0949, interpret format): or alarm value (r2124, interpret format): (optional)</td>
</tr>
<tr>
<td></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>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 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

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" (or "No report")

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 about reaction and acknowledgment is specified independently for a message with adjustable message type (e.g. reaction to F, acknowledgment for F).
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 informs 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 cause of the fault. The entries %1 and %2 are placeholders, which are filled appropriately in online operation (e.g. with the commissioning software).

Message class:

For each message, specifies the associated message class with the following structure:

- Text of the message class (number according to PROFIdrive)
- The message classes are transferred at different interfaces to higher-level control systems and their associated display and operating units.

The message classes that are available are shown in Table "Message classes and coding of various diagnostic interfaces" (Page 864). In addition to the text of the message class and their number according to PROFIdrive – as well as a brief help text regarding the cause and remedy – they also include information about the various diagnostic interfaces:

- PN (hex)
  Specifies the "Channel error type" of the PROFINET channel diagnostics.
  When activating the channel diagnostics, using the GSDML file, the texts listed in the table can be displayed.

- DS1 (dec)
  Specifies the bit number in date set DS1 of the diagnostic alarm for SIMATIC S7.
  When the diagnostic alarms are activated, the texts listed in the table can be displayed.

- DP (dec)
  Specifies the "Error type" of the channel-related diagnostics for PROFIBUS.
  When the channel diagnostics are activated, the texts listed in the standard and the GSD file can be displayed.
4 Faults and alarms

4.1 Overview of faults and alarms

- **ET 200 (dec)**
  
  Specifies the "Error type" of the channel-related diagnostics for the SIMATIC ET 200pro FC-2 device.
  
  When the channel diagnostics are activated, the texts listed in the standard and the GSD file of the ET 200pro can be displayed.

- **NAMUR (r3113.x)**

  Specifies the bit number in parameter r3113.

  For the interfaces DP, ET 200, NAMUR, in some instances, the message classes are combined.

### Table 4-4  Message classes and coding of various diagnostic interfaces

<table>
<thead>
<tr>
<th>Text of the message class (number according to PROFIdrive)</th>
<th>Diagnostics interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause and remedy.</td>
<td>PN (hex)</td>
</tr>
<tr>
<td><strong>Hardware/software errors (1)</strong></td>
<td></td>
</tr>
<tr>
<td>A hardware or software malfunction was detected. Carry out a POWER ON for the relevant component. If it occurs again, contact the hotline.</td>
<td>9000</td>
</tr>
<tr>
<td><strong>Line fault (2)</strong></td>
<td></td>
</tr>
<tr>
<td>A line supply fault has occurred (phase failure, voltage level ...). Check the line supply and fuses. Check the supply voltage. Check the wiring.</td>
<td>9001</td>
</tr>
<tr>
<td><strong>Supply voltage fault (3)</strong></td>
<td></td>
</tr>
<tr>
<td>An electronics supply voltage fault (48 V, 24 V, 5 V ...) was detected. Check the wiring. Check the voltage level.</td>
<td>9002</td>
</tr>
<tr>
<td><strong>DC-link overvoltage (4)</strong></td>
<td></td>
</tr>
<tr>
<td>The DC-link voltage has assumed an inadmissibly high value. Check the dimensioning of the system (line supply, reactor, voltages). Check the infed settings.</td>
<td>9003</td>
</tr>
<tr>
<td><strong>Power electronics fault (5)</strong></td>
<td></td>
</tr>
<tr>
<td>An impermissible operating state of the power electronics was detected (overcurrent, overttemperature, IGBT failure ...). Check compliance with the permissible load cycles. Check the ambient temperatures (fan).</td>
<td>9004</td>
</tr>
<tr>
<td><strong>Overtemperature of the electronic component (6)</strong></td>
<td></td>
</tr>
<tr>
<td>The temperature in the component has exceeded the highest permissible limit. Check the ambient temperature / control cabinet ventilation.</td>
<td>9005</td>
</tr>
<tr>
<td><strong>Ground fault / inter-phase short-circuit detected (7)</strong></td>
<td></td>
</tr>
<tr>
<td>A ground fault / inter-phase short-circuit was detected in the power cables or in the motor windings. Check the power cables (connection). Check the motor.</td>
<td>9006</td>
</tr>
<tr>
<td><strong>Motor overload (8)</strong></td>
<td></td>
</tr>
<tr>
<td>The motor was operated outside the permissible limits (temperature, current, torque ...). Check the load cycles and set limits. Check the ambient temperature / motor cooling.</td>
<td>9007</td>
</tr>
</tbody>
</table>
4 Faults and alarms

### 4.1 Overview of faults and alarms

<table>
<thead>
<tr>
<th>Text of the message class (number according to PROFIdrive)</th>
<th>Diagnostics interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause and remedy.</td>
<td>PN (hex)</td>
</tr>
<tr>
<td>Communication to the higher-level controller faulted (9)</td>
<td>9008</td>
</tr>
<tr>
<td>The communication to the higher-level controller (internal coupling, PROFIBUS, PROFINET …) is faulted or interrupted. Check the state of the higher-level controller. Check the communication connection/-wiring. Check the bus configuration/cycles.</td>
<td></td>
</tr>
<tr>
<td>Safety monitoring channel has detected an error (10)</td>
<td>9009</td>
</tr>
<tr>
<td>A safe operation monitoring function has detected an error.</td>
<td></td>
</tr>
<tr>
<td>Actual position/speed value incorrect or not available (11)</td>
<td>900A</td>
</tr>
<tr>
<td>An illegal signal state was detected while evaluating the encoder signals (track signals, zero marks, absolute values …). Check the encoder / state of the encoder signals. Observe the maximum permissible frequencies.</td>
<td></td>
</tr>
<tr>
<td>Internal (DRIVE-CLiQ) communication faulted (12)</td>
<td>900B</td>
</tr>
<tr>
<td>The internal communication between the SINAMICS components is faulted or interrupted. Check the DRIVE-CLiQ wiring. Ensure an EMC-compliant installation. Observe the maximum permissible quantity structures / cycles.</td>
<td></td>
</tr>
<tr>
<td>Infeed fault (13)</td>
<td>900C</td>
</tr>
<tr>
<td>The infeed is faulty or has failed. Check the infeed and its environment (line supply, filters, reactors, fuses …). Check the infeed control.</td>
<td></td>
</tr>
<tr>
<td>Braking controller / Braking Module faulted (14)</td>
<td>900D</td>
</tr>
<tr>
<td>The internal or external Braking Module is faulted or overloaded (temperature). Check the connection/state of the Braking Module. Comply with the permissible number of braking operations and their duration.</td>
<td></td>
</tr>
<tr>
<td>Line filter fault (15)</td>
<td>900E</td>
</tr>
<tr>
<td>The line filter monitoring has detected an excessively high temperature or another impermissible state. Check the temperature / temperature monitoring. Check the configuration to ensure that it is permissible (filter type, infeed, thresholds).</td>
<td></td>
</tr>
<tr>
<td>External measured value / signal state outside of the permissible range (16)</td>
<td>900F</td>
</tr>
<tr>
<td>A measured value / signal state read in via the input area (digital/analog/temperature) has assumed an impermissible value/state. Identify and check the relevant signal. Check the set thresholds.</td>
<td></td>
</tr>
<tr>
<td>Application / technological function faulty (17)</td>
<td>9010</td>
</tr>
<tr>
<td>The application / technological function has exceeded a (set) limit (position, velocity, torque …). Identify and check the relevant limit. Check the setpoint specification of the higher-level controller.</td>
<td></td>
</tr>
</tbody>
</table>

Table 4-4 Message classes and coding of various diagnostic interfaces, continued
4 Faults and alarms

4.1 Overview of faults and alarms

Table 4-4  Message classes and coding of various diagnostic interfaces, continued

<table>
<thead>
<tr>
<th>Text of the message class (number according to PROFIdrive)</th>
<th>Diagnostics interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cause and remedy.</td>
<td>PN (hex)</td>
</tr>
<tr>
<td>----------------------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Error in the parameterization/configuration/commissioning procedure (18)</td>
<td></td>
</tr>
<tr>
<td>An error was identified in the parameterization or in a commissioning procedure, or the parameterization does not match the actual device configuration. Determine the precise cause of the fault using the commissioning tool. Adapt the parameterization or device configuration.</td>
<td></td>
</tr>
<tr>
<td>9011</td>
<td>17</td>
</tr>
<tr>
<td>General drive fault (19)</td>
<td></td>
</tr>
<tr>
<td>Group fault. Determine the precise cause of the fault using the commissioning tool.</td>
<td></td>
</tr>
<tr>
<td>9012</td>
<td>18</td>
</tr>
<tr>
<td>Auxiliary unit fault (20)</td>
<td></td>
</tr>
<tr>
<td>The monitoring of an auxiliary unit (incoming transformer, cooling unit …) has detected an illegal state. Determine the exact cause of the fault and check the relevant device.</td>
<td></td>
</tr>
<tr>
<td>9013</td>
<td>19</td>
</tr>
</tbody>
</table>

1. Undervoltage condition of the electronics power supply
2. Overvoltage condition of the electronics power supply

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 parentheses indicate whether the default fault reactions can be changed and which fault reactions can be adjusted via parameters (p2100, p2101).

Note
See Table "Fault reactions" (Page 859)

Acknowledgment: Default acknowledgment (adjustable acknowledgment)

Specifies the default method of acknowledging faults after the cause has been eliminated.

The optional parentheses indicate whether the default acknowledgment can be changed and which acknowledgment can be adjusted via parameters (p2126, p2127).

Note
See Table "Acknowledgment of faults" (Page 860)
4 Faults and alarms

4.1 Overview of faults and alarms

Cause:

Description of 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:

Description of the methods available for removing the cause of the active fault or alarm.

WARNING

In certain cases, servicing and maintenance personnel are responsible for choosing a suitable method to remove the fault cause.
4 Faults and alarms

4.1 Overview of faults and alarms

4.1.3 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 "List of faults and alarms" (Page 870).

Faults and alarms are organized into the following number ranges:

Table 4-5  Number ranges of faults and alarms

<table>
<thead>
<tr>
<th>of</th>
<th>To</th>
<th>Area</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 section</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>13020</td>
<td>Licensing</td>
</tr>
<tr>
<td>13021</td>
<td>13099</td>
<td>Reserved</td>
</tr>
<tr>
<td>13100</td>
<td>13102</td>
<td>Know-how protection</td>
</tr>
<tr>
<td>13103</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><strong>Note</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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><strong>Note</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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>
<tr>
<td>37000</td>
<td>37999</td>
<td>HF Damping Module</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.1 Overview of faults and alarms

<table>
<thead>
<tr>
<th>of</th>
<th>To</th>
<th>Area</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 (closed-loop DC current control)</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

F01000  Internal software error
Message value:  Module: %1, line: %2
Message class:  Hardware / software error (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.
- if required, check the data on the non-volatile memory (e.g. memory card).
- upgrade firmware to later version.
- contact the Hotline.
- replace the Control Unit.

F01001  FloatingPoint exception
Message value:  %1
Message class:  Hardware / software error (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 basic 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: Inaccurate 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
Message class:  Hardware / software error (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.

F01003  Acknowledgement delay when accessing the memory
Message value:  %1
Message class:  Hardware / software error (1)
Drive object:  All objects
Reaction:  OFF2
Acknowledge:  IMMEDIATELY
Cause:  A memory area was accessed that does not return a "READY".
Fault value (r0949, interpret hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- carry out a POWER ON (power off/on) for all components.
- contact the Hotline.

N01004 (F, A) Internal software error
Message value:  %1
Message class:  Hardware / software error (1)
Drive object:  All objects
Reaction:  NONE
Acknowledge:  NONE
Cause:  An internal software error has occurred.
Fault value (r0949, hexadecimal):
Only for internal Siemens troubleshooting.
Remedy:
- read out diagnostics parameter (r9999).
- contact the Hotline.
See also: r9999 (Software error internal supplementary diagnostics)
Reaction upon F:  OFF2
Acknowl. upon F:  POWER ON
Reaction upon A:  NONE
Acknowl. upon A:  NONE

F01005  Firmware download for DRIVE-CLiQ component unsuccessful
Message value:  Component number: %1, fault cause: %2
Message class:  Hardware / software error (1)
Drive object:  All objects
Reaction:  NONE
Acknowledge:  IMMEDIATELY
Cause:  It was not possible to download the firmware to a DRIVE-CLiQ component.
Fault value (r0949, interpret hexadecimal):
yyyyy hex: 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.
4 Faults and alarms

4.2 List of faults and alarms

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.

xxxx = 0091 hex = 145 dec:
Checking the loaded firmware (checksum) was not completed by the component in the appropriate time.

xxxx = Additional values:
Only for internal Siemens troubleshooting.

Remedy:
- check the selected component number (p7828).
- check the DRIVE-CLiQ wiring.
- 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 firmware again.

Depending on p7826, the firmware will be automatically downloaded.

A01006  Firmware update for DRIVE-CLiQ component required

Message value: Component number: %1
Message class: General drive fault (19)
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
Message class: General drive fault (19)
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.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| F01010     | Drive type unknown                | %1            | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | IMMEDIATELY | - 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. |
|            |                                    |               |                                                   |              |          |             | - For SINUMERIK, auto commissioning is prevented. In this case, a POWER ON is required for all components and the auto commissioning must be restarted.                       |

**F01010** Drive type unknown

**Message value:** %1  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** An unknown drive type was found. Fault value (r0949, interpret decimal): Drive object number (refer to p0101, p0107).  
**Remedy:**  
- replace Power Module.  
- carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline.

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| F01011     | Download interrupted              | %1            | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | IMMEDIATELY | - check the communication cable.  
- download the project again.  
- boot from previously saved files (power-down/power-up or p0976).  
- when loading into the file system (download from memory card), use the matching version. |
|            |                                    |               |                                                   |              |          |             | - check the communication cable.  
- download the project again.  
- boot from previously saved files (power-down/power-up or p0976).  
- when loading into the file system (download from memory card), use the matching version. |

**F01011 (N)** Download interrupted

**Message value:** %1  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The project download was interrupted. Fault value (r0949, interpret decimal):  
1: The user prematurely interrupted the project download.  
2: The communication cable was interrupted (e.g. cable breakage, cable withdrawn).  
3: The project download was prematurely ended by the commissioning software (e.g. STARTER, SCOUT).  
100: Different versions between the firmware version and project files which were loaded by loading into the file system "Download from memory card".  
**Note:** The response to an interrupted download is the state "first commissioning".  
**Remedy:**  
- check the communication cable.  
- download the project again.  
- boot from previously saved files (power-down/power-up or p0976).  
- when loading into the file system (download from memory card), use the matching version.  
- contact the Hotline.

**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| F01015     | Internal software error            | %1            | Hardware / software error (1)                      | All objects  | OFF2     |             | - carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline. |
|            |                                    |               |                                                   |              |          |             | - carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline. |

**F01015** Internal software error

**Message value:** %1  
**Message class:** Hardware / software error (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
- **Message class:** Hardware / software error (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
- **Message class:** Hardware / software error (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.

F01018 **Booting has been interrupted several times**

- **Message value:** -
- **Message class:** Hardware / software error (1)
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** POWER ON
- **Cause:** Module booting was interrupted several times. As a consequence, the module boots with the factory setting.
Possible reasons for booting being interrupted:
- power supply interrupted.
- CPU crashed.
- parameterization invalid.

Remedy:
- carry out a POWER ON (power off/on). After switching on, the module reboots from the valid parameterization (if available).
- restore the valid parameterization.

Examples:
a) Carry out a first commissioning, save, carry out a POWER ON (switch-off/switch-on).
b) Load another valid parameter backup (e.g. from the memory card), save, carry out a POWER ON (switch-off/switch-on).

Note:
If the fault situation is repeated, then this fault is again output after several interrupted boots.

A01019 Writing to the removable data medium unsuccessful
Message value: -
Message class: Hardware / software error (1)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The write access to the removable data medium was unsuccessful.
Remedy: Remove and check the removable data medium. Then run the data backup again.

A01020 Writing to RAM disk unsuccessful
Message value: -
Message class: Hardware / software error (1)
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
Message class: Hardware / software error (1)
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: An internal software timeout has occurred.
Fault value (0949, 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: -
Message class: Communication error to the higher-level control system (9)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, 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.
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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 monitoring 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: -
Message class: Communication error to the higher-level control system (9)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, 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
Message class: Hardware / software error (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.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
See also: p0971 (Save drive object parameters)

Remedy: Save all parameters (p0977 = 1 or "copy RAM to ROM").
See also: p0977 (Save all parameters)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY

F01033 Units changeover: Reference parameter value invalid

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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: p0595 (Technological unit selection)

Remedy: Set the value of the reference parameter to a number different than 0.0.
See also: p0596 (Technological unit reference quantity), p2000 (Reference speed), p2001 (Reference voltage), p2002 (Reference current), p2003 (Reference torque), r2004 (Reference power)
### F01034 Units changeover: Calculation parameter values after reference value change unsuccessful

**Message value:** Parameter: %1  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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.
- See also: p0596 (Technological unit reference quantity), p2000 (Reference speed), p2001 (Reference voltage), p2002 (Reference current), p2003 (Reference torque), r2004 (Reference power)

**Remedy:**
- Select the value of the reference parameter such that the parameter involved can be calculated in the per unit representation.
- Technology unit selection (p0595) before changing the reference parameter p0596, set p0595 = 1.

- See also: p0596 (Technological unit reference quantity), p2000 (Reference speed), p2001 (Reference voltage), p2002 (Reference current), p2003 (Reference torque), r2004 (Reference power)

### A01035 (F) ACX: Parameter back-up file corrupted

**Message value:** %1  
**Message class:** Hardware / software error (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):**
- ddcbbbbaa 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)

**Reaction upon F:** NONE (OFF1, OFF2, OFF3)  
**Acknowl. upon F:** IMMEDIATELY

### F01036 (A) ACX: Parameter back-up file missing

**Message value:** %1  
**Message class:** Hardware / software error (1)  
**Drive object:** All objects  
**Reaction:** 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: yyy in the file name PSxxxxyy.ACX
- yyy = 000 --> consistency back-up file
- yyy = 001 ... 062 --> drive object number
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yyy = 000 --> consistency 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
This means that the parameter files are again completely written into the non-volatile memory.

**Note:**
If the project data have not been backed up, then a new first commissioning is required.

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

---

**F01038 (A)  ACX: Loading the parameter back-up file unsuccessful**

**Message value:** %1

**Message class:** Hardware / software error (1)

**Drive object:** All objects

**Reaction:** 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: yyy 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

**Message class:** Hardware / software error (1)

**Drive object:** All objects

**Reaction:** NONE (OFF1, OFF2, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:**
Writing to at least one parameter back-up file PSxxxxyy.*** in the non-volatile memory was unsuccessful.
- In the directory /USER/SINAMICS/DATA/ at least one parameter back-up file PSxxxxyy.*** 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.
    - 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:   
Message class:   Error in the parameterization / configuration / commissioning procedure (18)
Drive object:   All objects
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 parameters (p0971, p0977).
                - carry out a POWER ON (power off/on) for all components.
                Then:
                - upload the drive unit (commissioning software).

F01041    Parameter save necessary
Message value:   %1
Message class:   Error in the parameterization / configuration / commissioning procedure (18)
Drive object:   All objects
Reaction:       NONE
Acknowledge:    IMMEDIATELY
Cause:          Defective or missing files were detected on the memory card when booting.
Fault value (r0949, interpret decimal):
1: Source file cannot be opened.
2: Source file cannot be read.
3: Target directory cannot be set up.
4: Target file cannot be set up/opened.
5: Target file cannot be written to.
Additional values:
    Only for internal Siemens troubleshooting.
    - 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

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** OFF2 (NONE, OFF1, OFF3)

**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):

```
cbbbaaaa hex
aaaa = Parameter
bb = Index
cc = fault cause
```

- 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.
- 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 = 30).
- 126: Write access only in the commissioning state, device ready (device: p0009 = 0).
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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 binecor 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: 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 generation.
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 device 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” (r0947 and r0949).
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).
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
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<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01044</td>
<td>CU: Descriptive data error</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>OFF2</td>
<td>POWER ON</td>
<td>An error was detected when loading the descriptive data saved in the non-volatile memory.</td>
<td>Replace the memory card or Control Unit.</td>
</tr>
<tr>
<td>A01045</td>
<td>CU: Configuring data invalid</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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.</td>
<td>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 &quot;Copy RAM to ROM&quot; function or with p0977 = 1. This overwrites the incorrect parameter files in the non-volatile memory – and the alarm is withdrawn.</td>
</tr>
<tr>
<td>A01049</td>
<td>CU: It is not possible to write to file</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>It is not possible to write into a write-protected file (PSxxxxxx.acx). The write request was interrupted.</td>
<td>Check whether the &quot;write protected&quot; 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).</td>
</tr>
<tr>
<td>F01050</td>
<td>Memory card and device incompatible</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
<td>IMMEDIATELY</td>
<td>The memory card and the device type do not match (e.g. a memory card for SINAMICS S is inserted in SINAMICS G).</td>
<td>- insert the matching memory card. - use the matching Control Unit or power unit.</td>
</tr>
<tr>
<td>F01054</td>
<td>CU: System limit exceeded</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>At least one system overload has been identified.</td>
<td></td>
</tr>
</tbody>
</table>
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Fault value (r0949, interpret decimal):
1: Computing time load too high (r9976[1]).
5: Peak load too high (r9976[5]).

Note:
As long as this fault is present, it is not possible to save the parameters (p0971, p0977).
See also: r9976 (System utilization)

Remedy:
Re fault value = 1, 5:
- 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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: The requested DRIVE-CLiQ type (hps_ps, hps_enc, ...) has been specified differently for the same slave component.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01058</td>
<td>CU: Internal error (slave missing in topology)</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>The requested slave component does not exist in the topology.</td>
<td>Contact the Hotline.</td>
</tr>
<tr>
<td>F01059</td>
<td>CU: Internal error (port does not exist)</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>The port object assigned according to the topology of the requested slave component does not exist.</td>
<td>Contact the Hotline.</td>
</tr>
<tr>
<td>F01060</td>
<td>CU: Internal error (parameter group not available)</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>The requested parameter group (IREG, NREG, ...) is not offered by this slave type.</td>
<td>Contact the Hotline.</td>
</tr>
<tr>
<td>F01061</td>
<td>CU: Internal error (application not known)</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>An application that is not registered with TSM has attempted to register with registerSlaves().</td>
<td>None of the above.</td>
</tr>
</tbody>
</table>

Fault value (r0949, interpret hexadecimal): Method ID.

Note: Only for internal Siemens troubleshooting.

Remedy: Contact the Hotline.

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.
4 Faults and alarms

4.2 List of faults and alarms

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
**Message class:** Hardware / software error (1)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
**Reaction:** 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.

F01068  **CU: Data memory memory overflow**

**Message value:** %1
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)
**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:** 
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)
**Drive object:** CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S
**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.
- If required, withdraw the memory card and carry out POWER ON.
- save the parameters (p0971 = 1).
### A01069 Parameter backup and device incompatible

**Message value:** -  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31  
**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).

### F01072 Memory card restored from the backup copy

**Message value:** -  
**Message class:** General drive fault (19)  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** IMMEDIATELY  
**Cause:** The Control Unit was switched-off while writing to the memory card. This is why the visible partition became defective.  
After switching on, the data from the non-visible partition (backup copy) were written to the visible partition.  
**Remedy:** Check that the firmware and parameterization is up-to-date.

### A01073 (N) POWER ON required for backup copy on memory card

**Message value:** -  
**Message class:** General drive fault (19)  
**Drive object:** All objects  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** The parameter assignment on the visible partition of the memory card has changed.  
In order that the backup copy on the memory card is updated on the non-visible partition, it is necessary to carry out a POWER ON or hardware reset (p0972) of the Control Unit.  
Note:  
It is possible that a new POWER ON is requested via this alarm (e.g. after saving with p0971 = 1).  
**Remedy:**  
- carry out a POWER ON (power off/on) for the Control Unit.  
- carry out a hardware reset (RESET button, p0972).  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A01099 Tolerance window of time synchronization exited

**Message value:** -  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**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)
4 Faults and alarms

4.2 List of faults and alarms

A01100  CU: Memory card withdrawn

Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

A01104  CU: Do not power down. File system being optimized.

Message value: -
Message class: General drive fault (19)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The file system is currently being optimized in the non-volatile device memory of the Control Unit. This process may take several minutes.
Notice: The Control Unit must not be powered down during optimization, as this can lead to user data being lost.
Remedy: Leave the Control Unit powered up during optimization.
Note: The alarm disappears automatically once file system optimization is complete.

F01105 (A)  CU: Insufficient memory

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: There is not sufficient free memory space available.
Remedy: Not necessary.
4 Faults and alarms

4.2 List of faults and alarms

F01107  CU: Save to memory card unsuccessful
Message value: %1
Message class: Hardware / software error (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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: TM150, TM15DI_DO, TM31
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.
4 Faults and alarms

4.2 List of faults and alarms

F01120 (A) Terminal initialization has failed
Message value: %1
Message class: Hardware / software error (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
Message class: Application / technological function faulted (17)
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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):
dddcbbaa 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.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<td>CU: Number of drive objects of a category exceeded</td>
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<tr>
<td><strong>F01152</strong></td>
<td>CU: Invalid constellation of drive object types</td>
</tr>
<tr>
<td><strong>F01200</strong></td>
<td>CU: Time slice management internal software error</td>
</tr>
</tbody>
</table>

**F01151: CU: Number of drive objects of a category exceeded**

**Message value:** Drive object category: %1, number permitted: %2, actual number: %3

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** The maximum permissible number of drive objects of a category was exceeded.

- Drive object category:
- Number permitted:
- Actual number:

**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.

**F01152: CU: Invalid constellation of drive object types**

**Message value:**

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** POWER ON

**Cause:** It is not possible to simultaneously operate drive object types SERVO, VECTOR and HLA.

A maximum of 2 of these drive object types can be operated on a Control Unit.

**Remedy:**
- Power down the unit.
- Restrict the use of drive object types SERVO, VECTOR, HLA to a maximum of 2.
- Re-commission the unit.

**F01200: CU: Time slice management internal software error**

**Message value:** %1

**Message class:** Hardware / software error (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.

**Remedy:**
- Check the sampling time setting (p0112, p0115, p4099, p9500, p9511).
- Contact the Hotline.
## 4.2 List of faults and alarms

### F01205 CU: Time slice overflow

- **Message value:** \%1
- **Message class:** Hardware / software error (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
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **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
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
- **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.
- **Remedy:**
  - Contact the Hotline.

### A01223 CU: Sampling time inconsistent

- **Message value:** \%1
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **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, SMI10 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 250 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.
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, p4099

A01224 | CU: Pulse frequency inconsistent
--- | ---
Message value: | %1
Message class: | Error in the parameterization / configuration / commissioning procedure (18)
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.

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01250</td>
<td>CU: CU-EEPROM incorrect read-only data</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE (OFF2)</td>
<td>POWER ON</td>
<td>Error when reading the read-only data of the EEPROM in the Control Unit. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- carry out a POWER ON. - replace the Control Unit.</td>
</tr>
<tr>
<td>A01251</td>
<td>CU: CU-EEPROM incorrect read-write data</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>Error when reading the read-write data of the EEPROM in the Control Unit. Alarm value (r2124, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>For alarm value r2124 &lt; 256, the following applies: - carry out a POWER ON. - replace the Control Unit. For alarm value r2124 &gt;= 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.</td>
</tr>
<tr>
<td>F01255</td>
<td>CU: Option Board EEPROM read-only data error</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE (OFF2)</td>
<td>POWER ON</td>
<td>Error when reading the read-only data of the EEPROM in the Option Board. Fault value (r0949, interpret decimal): Only for internal Siemens troubleshooting.</td>
<td>- carry out a POWER ON. - replace the Control Unit.</td>
</tr>
<tr>
<td>A01256</td>
<td>CU: Option Board EEPROM read-write data error</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>Error when reading the read-write data of the EEPROM in the Option Board.</td>
<td></td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

Fault value (r0949, interpret decimal):
Only for internal Siemens troubleshooting.

Remedy:
- carry out a POWER ON.
- replace the Control Unit.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01303</td>
<td>Component does not support the required function</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>A function requested by the Control Unit is not supported by a DRIVE-CLiQ component.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
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<td>1: The component does not support the de-activation.</td>
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<td>101: The Motor Module does not support an internal armature short-circuit.</td>
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<td>102: The Motor Module does not support the de-activation.</td>
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<td>201: The Sensor Module does not support actual value inversion (p0410.0 = 1) when using a Hall sensor (p0404.6 = 1) for the commutation.</td>
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<td>202: The Sensor Module does not support parking/unparking.</td>
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<td>203: The Sensor Module does not support the de-activation.</td>
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<td>204: The firmware of this Terminal Module 15 (TM15) does not support the application TM15DI/DO.</td>
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<td>205: The Sensor Module does not support the selected temperature evaluation (r0458).</td>
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<td>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.</td>
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<td>207: The power unit with this hardware version does not support operation with device supply voltages of less than 380 V.</td>
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<td>208: The Sensor Module does not support de-selection of commutation with zero mark (via p0430.23).</td>
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<td>211: The Sensor Module does not support single-track encoders (r0459.10).</td>
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<td>212: The Sensor Module does not support LVDT sensors (p4677.0).</td>
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<td>213: The Sensor Module does not support the characteristic type (p4662).</td>
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<td></td>
<td>Remedy:</td>
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<td></td>
<td>Upgrade the firmware of the DRIVE-CLiQ component involved.</td>
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<td>For fault value = 205:</td>
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<td>Check parameter p0600 and p0601 and if required, adapt interpretation.</td>
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<td>For fault value = 207:</td>
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<td></td>
<td>Replace the power unit or if required set the device supply voltage higher (p0210).</td>
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<td>For fault value = 208:</td>
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<td></td>
<td>Check parameter p0430.23 and reset if necessary.</td>
</tr>
<tr>
<td>A01304 (F)</td>
<td>Firmware version of DRIVE-CLiQ component is not up-to-date</td>
<td>%1</td>
<td>General drive fault (19)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The non-volatile memory has a more recent firmware version than the one in the connected DRIVE-CLiQ component.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
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<tr>
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<td></td>
<td>Component number of the DRIVE-CLiQ component involved.</td>
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<td></td>
<td>Remedy:</td>
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<td></td>
<td>Update the firmware (p7828, p7829 and commissioning software).</td>
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<td></td>
<td>Reaction upon F: NONE</td>
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<td></td>
<td></td>
<td></td>
<td>Acknowl. upon F: IMMEDIATELY</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

**F01305**  
**Topology: Component number missing**

- **Message value:** %1  
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
- **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 servovector drives, refer to p0107), p0141, p0151, p0161).
  
  Fault value (r0949, interpret decimal):
  
  Data set number.
  
  Note:
  
  The fault also occurs if 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 encoder 3 (p0189)).
  
  See also: p0121 (Power unit component number), p0141 (Encoder interface (Sensor Module) component number), p0142 (Encoder component number), p0151 (Terminal Module component number), p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number)

- **Remedy:**
  
  - enter missing component number.
  
  - if required, remove the component and restart commissioning.
  
  See also: p0121 (Power unit component number), p0141 (Encoder interface (Sensor Module) component number), p0142 (Encoder component number), p0151 (Terminal Module component number), p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number)

**A01306**  
**Firmware of the DRIVE-CLiQ component being updated**

- **Message value:** %1  
- **Message class:** General drive fault (19)  
- **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:** %1, to %2: %3, connection: %4  
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
- **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 (Activate/de-activate drive object), p0125 (Activate/de-activate power unit components), p0145 (Activate/de-activate encoder interface)
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01315</td>
<td>Drive object not ready for operation</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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.</td>
<td>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 (Activate/de-activate drive object), p0125 (Activate/de-activate power unit components), p0145 (Activate/de-activate encoder interface)</td>
</tr>
<tr>
<td>A01316</td>
<td>Drive object inactive and again ready for operation</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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 &quot;activate&quot; (p0125, p0145, p0155, p0165). Note: This is the only message that is displayed for a de-activated drive object.</td>
<td>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)</td>
</tr>
<tr>
<td>A01317</td>
<td>De-activated component again present</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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.</td>
<td>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)</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

A01318  BICO: De-activated interconnections present

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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:
- Set p9496 to 1 or 2
- De-activate the drive object again.

A01319  Inserted component not initialized

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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:
  - 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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

**Message value:** %1
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)
**Drive object:** All objects
**Reaction:** NONE
**Acknowledge:** NONE

**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

**Message value:** %1
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)
**Drive object:** All objects
**Reaction:** NONE
**Acknowledge:** NONE

**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

**Message value:** %1
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)
**Drive object:** All objects
**Reaction:** NONE
**Acknowledge:** NONE

**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.
4 Faults and alarms
4.2 List of faults and alarms

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
Message value: Component number: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
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.

A01330  Topology: Quick commissioning not possible
Message value: Fault cause: %1, supplementary information: %2, preliminary component number: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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 (r2124, interpret hexadecimal):
ccccbbaa 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.
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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.
- cccc = preliminary component number of the component with illegal EEPROM data.

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).

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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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).
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>F01340</th>
<th>Topology: Too many components on one line</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number or connection number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>For the selected communications clock cycle, too many DRIVE-CLiQ components are connected to one line of the Control Unit.</td>
</tr>
</tbody>
</table>

Fault value (r0949, interpret hexadecimal):

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.
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.

**Remedy:**
- 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.
- If necessary, for DCC or FBLOCKS, change the assignment of the clock cycles in the previously mentioned parameters apply, which have components on the line involved.
- 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.
4 Faults and alarms
4.2 List of faults and alarms

F01341  Topology: Maximum number of DRIVE-CLiQ components exceeded
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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 wiring.
- 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The actual topology indicates at least one illegal component.
Fault value (r0949, interpret hexadecimal):
yyxx 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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)
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).
In general:
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  
- **Message class:** Hardware / software error (1)  
- **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  
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
- **Drive object:** All objects  
- **Reaction:** OFF2  
- **Acknowledge:** IMMEDIATELY  
- **Cause:** In the actual topology, 2 Control Units are connected with one another through DRIVE-CLiQ. As standard, this is not permitted.
  - It is only permitted, if the OA application OALINK is already installed on both Control Units.
  - Fault value (r0949, interpret hexadecimal):
  - yyyx 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 DRIVE-CLiQ connection, restart the systems, install OALINK on both Control Units and commission.
  - remove the connection to the second Control Unit and restart.
  - for the S120M component DRIVE-CLiQ extension, interchange the hybrid cable (IN/OUT).
## 4 Faults and alarms

### 4.2 List of faults and alarms

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<td><strong>A01358</strong></td>
<td><strong>Topology: Line termination not available</strong></td>
</tr>
<tr>
<td><strong>Message value:</strong></td>
<td>CU connection number: %1, component number: %2, connection number: %3</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</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>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): zzyyx hex: zz = connection number of the distributed drive where there is no terminating connector yy = component number xx = CU connection number</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>Install the line terminating connector for the last distributed drive.</td>
</tr>
</tbody>
</table>

| **F01359** | **Topology: DRIVE-CLiQ performance not sufficient** |
| **Message value:** | %1 |
| **Message class:** | Error in the parameterization / configuration / commissioning procedure (18) |
| **Drive object:** | All objects |
| **Reaction:** | NONE |
| **Acknowledge:** | IMMEDIATELY |
| **Cause:** | The DRIVE-CLiQ performance is not sufficient at one line in order to identify an inserted component. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting. |
| **Remedy:** | - carry out a POWER ON (power off/on). - Distribute components across several DRIVE-CLiQ lines. Note: For this topology, do not withdraw and insert components in operation. |

| **F01360** | **Topology: Actual topology not permissible** |
| **Message value:** | Fault cause: %1, preliminary component number: %2 |
| **Message class:** | Error in the parameterization / configuration / commissioning procedure (18) |
| **Drive object:** | All objects |
| **Reaction:** | NONE |
| **Acknowledge:** | IMMEDIATELY |
| **Cause:** | The detected actual topology is not permissible. Fault value (r0949, interpret hexadecimal): cccccbaa hex: cccc = preliminary component number, bb = no significance, 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. |

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4 Faults and alarms

4.2 List of faults and alarms

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.

Re fault cause = 10, 11:
Reduce the number of components.

A01361 Topology: Actual topology contains SINUMERIK and SIMOTION components

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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):
  ddccbbaa 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.
4 Faults and alarms

4.2 List of faults and alarms

Alarm value (r2124, interpret decimal):
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 alarm value and ensure compliance with the corresponding topology rule(s).

F01375  Topology: Connection duplicated between two components
Message value: Component: %1, %2, connection: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: When checking the actual topology, a ring-type connection was detected. The fault value describes a component contained in the ring.
Fault value (r0949, interpret hexadecimal):
cbbbaaa hex:
cc = connection number (%3)
bb = component class (% 2)
aaaa = preliminary component number (%1)
Component class:
0: Component unknown.
1: Control Unit
2: Motor Module
3: Line Module
4: Sensor Module
5: Voltage Sensing Module
6: Terminal Module
7: DRIVE-CLiQ Hub Module
8: Controller Extension
9: Filter Module
10: Hydraulic Module.
49: DRIVE-CLiQ component
50: Option slot
60: Encoder
70: DRIVE-CLiQ motor
71: Hydraulic cylinder
4 Faults and alarms

4.2 List of faults and alarms

72: Hydraulic valve
80: Motor

Connection number:
0: Port 0, 1: Port 1, 2: Port 2, 3: Port 3, 4: Port 4, 5: Port 5

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 EEPROM defective
Message value: Preliminary component number: %1
Message class: Hardware / software error (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:
bbbb = reserved
aaaa = preliminary component number of the defective components

Remedy:
Output the fault value and remove the defected component.

A01381 Topology: power unit incorrectly inserted
Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a power unit in the actual topology that has been incorrectly inserted.
Alarm value (r2124, interpret hexadecimal):
ddccbbbaa hex:
dd = connection number (%4)
c = component number (%3)
bb = component class (% 2)
ba = component number of the incorrectly inserted component (% 1)

Note:
The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
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 topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
- 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).
4 Faults and alarms

4.2 List of faults and alarms

---

**A01382 Topology: Sensor Module incorrectly inserted**

| Message value: | Component: %1, to %2: %3, connection: %4 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The topology comparison has detected a Sensor Module in the actual topology that has been incorrectly inserted with respect to the target technology. |

*Alarm value (r2124, interpret hexadecimal):*

ddcbbbaa hex:

- dd = connection number (%4)
- cc = component number (%3)
- bb = component class (%2)
- aa = component number of the incorrectly inserted component (%1)

*Note:* The component is described in dd, cc and bb, where the component involved is incorrectly inserted. 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 topologies:
  - insert the components involved at the right connection (correct the actual topology).
  - adapt the project/parameterization in the commissioning software (correct the target topology).
  - 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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**A01383 Topology: Terminal Module incorrectly inserted**

| Message value: | Component: %1, to %2: %3, connection: %4 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The topology comparison has detected a Terminal Module in the actual topology that has been incorrectly inserted with respect to the target technology. |

*Alarm value (r2124, interpret hexadecimal):*

ddcbbbaa hex:

- dd = connection number (%4)
- cc = component number (%3)
- bb = component class (%2)
- aa = component number of the incorrectly inserted component (%1)

*Note:* The component is described in dd, cc and bb, where the component involved is incorrectly inserted. 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 topologies:
  - insert the components involved at the right connection (correct the actual topology).
  - adapt the project/parameterization in the commissioning software (correct the target topology).
  - 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).
4 Faults and alarms

4.2 List of faults and alarms

---

**A01384**  
**Topology: DRIVE-CLiQ Hub Module incorrectly inserted**

- **Message value:** Component: %1, to %2: %3, connection: %4  
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
- **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 incorrectly inserted with respect to the target topology.
  
  - **Alarm value** (r2124, interpret hexadecimal):
    - ddccbbaa hex:
      - dd = connection number (%4)
      - cc = component number (%3)
      - bb = component class (%2)
      - aa = component number of the incorrectly inserted component (%1)
  
  - **Note:**
    - The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
    - 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 topologies:
    - insert the components involved at the right connection (correct the actual topology).
    - adapt the project/parameterization in the commissioning software (correct the target topology).
    - 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: Controller Extension incorrectly inserted**

- **Message value:** Component: %1, to %2: %3, connection: %4  
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
- **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 incorrectly inserted with respect to the target topology.
  
  - **Alarm value** (r2124, interpret hexadecimal):
    - ddccbbaa hex:
      - dd = connection number (%4)
      - cc = component number (%3)
      - bb = component class (%2)
      - aa = component number of the incorrectly inserted component (%1)
  
  - **Note:**
    - The component is described in dd, cc and bb, where the component involved is incorrectly inserted.
    - 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 topologies:
    - insert the components involved at the right connection (correct the actual topology).
    - adapt the project/parameterization in the commissioning software (correct the target topology).
    - 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).
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<tr>
<th>Error Code</th>
<th>Description</th>
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<td>A01386</td>
<td><strong>Topology: DRIVE-CLiQ component incorrectly inserted</strong></td>
</tr>
<tr>
<td>A01389</td>
<td><strong>Topology: Motor with DRIVE-CLiQ incorrectly inserted</strong></td>
</tr>
</tbody>
</table>

**A01386**

**Message value:** Component: %1, to: %2: %3, connection : %4

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**
The topology comparison has detected a DRIVE-CLiQ component in the actual topology that has been incorrectly inserted with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

- **ddccbaa hex:**
  - dd = connection number (%4)
  - cc = component number (%3)
  - bb = component class (%2)
  - aa = component number of the incorrectly inserted component (%1)

**Note:**
The component is described in dd, cc and bb, where the component involved is incorrectly inserted. 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 topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
- 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).

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A01389</td>
<td><strong>Topology: Motor with DRIVE-CLiQ incorrectly inserted</strong></td>
</tr>
</tbody>
</table>

**Message value:** Component: %1, to: %2: %3, connection : %4

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**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 incorrectly inserted with respect to the target topology.

Alarm value (r2124, interpret hexadecimal):

- **ddccbaa hex:**
  - dd = connection number (%4)
  - cc = component number (%3)
  - bb = component class (%2)
  - aa = component number of the incorrectly inserted component (%1)

**Note:**
The component is described in dd, cc and bb, where the component involved is incorrectly inserted. 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 topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
- 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).
4 Faults and alarms

4.2 List of faults and alarms

A01416  Topology: Component additionally inserted

Message value: %1, to %2: %3, connection: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.

Alarm value (r2124, interpret hexadecimal):

ddcbbbaa hex:
  dd = component class (%2)
  cc = connection number (%4)
  bb = component class of the additional component (%1)
  aa = component number (%3)

Note:
  The component class of the additional component is contained in bb.
  The component is described in dd, cc and aa, where the additional component is inserted.
  Component class and connection number are described in F01375.

Remedy:
Adapting topologies:
- remove the additional component (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).

Note:
Under "Topology --> Topology view" the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01420  Topology: Component different

Message value: Component: %1, Soll: %2, actual: %3, difference: %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected differences in the actual and target topologies in the electronic rating plate.

Alarm value (r2124, interpret hexadecimal):

ddcbbbaa hex: aa = component number (%1), bb = component class of the target topology (%2), cc = component class of the actual topology (%3), dd = difference (%4)

  dd = 01 hex = 1 dec:
  Different component type.
  dd = 02 hex = 2 dec:
  Different Order No.
  dd = 03 hex = 3 dec:
  Different manufacturer.
  dd = 04 hex = 4 dec:
  Connection changed over for a multi-component slave (e.g. Double Motor Module), defective EEPROM data in the electronic rating plate, or only part of a multi-component slave set to "de-activate and not present".
  dd = 05 hex = 5 dec:
  NX10 or NX15 used instead of CX32.
  dd = 06 hex = 6 dec:
  NX10 or NX15 used instead of CX32.
  dd = 07 hex = 7 dec:
  Different number of connections.

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.
4 Faults and alarms

4.2 List of faults and alarms

Remedy: Adapting topologies:
- connect the expected component (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).

Topology comparison - if required, adapt the comparison level:
- parameterize the topology comparison of all components (p9906).
- parameterize the topology comparison of one components (p9907, p9908).

Note: Under “Topology --> Topology view” the commissioning software where relevant offers improved diagnostics capability (e.g. setpoint/actual value comparison).

A01425 Topology: Serial number different

Message value: Component: %1, %2, differences: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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):
ddcbbbaa hex:
dd = reserved
cc = number of differences (%3)
bb = component class (%2)
aa = component number (%1)

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 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:
c = 1 --> can be acknowledged using p9904 or p9905.
c > 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: Incorrect connection used

Message value: Component: %1, %2, connection (actual): %3, connection (target): %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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. For a component, another connection was used.
The different connections of a component are described in the alarm value.

Alarm value (r2124, interpret hexadecimal):
ddcbbbaa hex:
dd = connection number of the target topology (%4)
c = connection number of the actual topology (%3)
b = component class (%2)
aa = component number (%1)
4.2 List of faults and alarms

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 topologies:
- reinsert the DRIVE-CLiQ cable to the component (correct the actual topology).
- adapt the project/parametrization in the commissioning software (correct the target topology).
- 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)

F01451 Topology: Target topology is invalid

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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):
ccccbbaa hex: cccc = index error, bb = component number, aa = fault cause
aa = 1B hex = 27 dec: Error not specified.
aa = 1C hex = 28 dec: Value illegal.
aa = 1D hex = 29 dec: Incorrect ID.
aa = 1E hex = 30 dec: Incorrect ID length.
aa = 1F hex = 31 dec: Too few indices left.
aa = 20 hex = 32 dec: component not connected to Control Unit.
Remedy:
Reload the target topology using the commissioning software.

A01481 (N) Topology: power unit not inserted

Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a power unit that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.
Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parametrization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- check that the component is working properly.
4 Faults and alarms

4.2 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).

Reaction upon N: NONE
Acknowl. upon N: NONE

A01482 Topology: Sensor Module not inserted

Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: The topology comparison has detected a Sensor Module that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note: The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy: Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

A01483 Topology: Terminal Module not inserted

Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE

Cause: The topology comparison has detected a Terminal Module that is missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note: The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.
4 Faults and alarms

4.2 List of faults and alarms

Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

A01484 Topology: DRIVE-CLiQ Hub Module not inserted
Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
The topology comparison has detected a DRIVE-CLiQ Hub Module missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.

Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

A01485 Topology: Controller Extension not inserted
Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
The topology comparison has detected a Control Extension (CX32) missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.
4 Faults and alarms

4.2 List of faults and alarms

Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

| Message value: | 4.2 List of faults and alarms |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The topology comparison has detected a DRIVE-CLiQ component missing in the actual topology with respect to the target topology. Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note:
The component is described in dd, cc and bb, where the component has not been inserted. Component class and connection number are described in F01375.

Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).

Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

A01486 Topology: DRIVE-CLiQ component not inserted

Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected a DRIVE-CLiQ component missing in the actual topology with respect to the target topology. Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note:
The component is described in dd, cc and bb, where the component has not been inserted. Component class and connection number are described in F01375.

A01487 Topology: Option slot component not inserted

Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The topology comparison has detected an option slot component missing in the actual topology with respect to the target topology. Alarm value (r2124, interpret hexadecimal):

ddccbbaa hex:

dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)

Note:
The component is described in dd, cc and bb, where the component has not been inserted. Component class and connection number are described in F01375.
4 Faults and alarms

4.2 List of faults and alarms

Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

A01489 Topology: Motor with DRIVE-CLiQ not inserted
Message value: Component: %1, to %2: %3, connection : %4
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
The topology comparison has detected a motor with DRIVE-CLiQ missing in the actual topology with respect to the target topology.
Alarm value (r2124, interpret hexadecimal):
ddccbbaa hex:
dd = connection number (%4)
cc = component number (%3)
bb = component class (% 2)
aa = component number of the component that has not been inserted (% 1)
Note:
The component is described in dd, cc and bb, where the component has not been inserted.
Component class and connection number are described in F01375.
Remedy:
Adapting topologies:
- insert the components involved at the right connection (correct the actual topology).
- adapt the project/parameterization in the commissioning software (correct the target topology).
Check the hardware:
- check the 24 V supply voltage.
- check DRIVE-CLiQ cables for interruption and contact problems.
- 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).

F01505 (A) BICO: Interconnection cannot be established
Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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
Acknow. upon A: NONE
4 Faults and alarms

4.2 List of faults and alarms

F01506 (A) BICO: No standard telegram

| Message value: | Parameter: %1 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM31 |
| 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 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | There are BICO interconnections to an inactive/inoperable drive object. The BI/CI parameters involved are listed in r9498. The associated BO/CO parameters are listed in r9499. 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: | OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2) |
| Acknowl. upon F: | IMMEDIATELY |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |

A01508 BICO: Interconnections to inactive objects exceeded

| Message value: | - |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| 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.
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
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<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01510</td>
<td><strong>BICO: Signal source is not float type</strong></td>
<td>Parameter: %1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>The requested connector output does not have the correct data type. This interconnection is not established.</td>
<td>Interconnect this connector input with a connector output having a float data type.</td>
</tr>
<tr>
<td>F01511 (A)</td>
<td><strong>BICO: Interconnection with different scalings</strong></td>
<td>Parameter: %1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>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).</td>
<td>Not necessary.</td>
</tr>
<tr>
<td>F01512</td>
<td><strong>BICO: No scaling available</strong></td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>OFF2</td>
<td>POWER ON</td>
<td>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.</td>
<td>Apply scaling or check the transfer value.</td>
</tr>
<tr>
<td>F01513 (N, A)</td>
<td><strong>BICO: Interconnection cross DO with different scalings</strong></td>
<td>Parameter: %1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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 N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

<table>
<thead>
<tr>
<th>A01514 (F)</th>
<th>BICO: Error when writing during a reconnect</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Parameter: %1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</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>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.</td>
</tr>
<tr>
<td><strong>Alarm value (r2124, interpret decimal):</strong></td>
<td>Parameter number of the BICO input (signal sink).</td>
</tr>
</tbody>
</table>

**Remedy:**
Not necessary.

**Reaction upon F:** NONE

**Acknowl. upon F:** IMMEDIATELY

<table>
<thead>
<tr>
<th>F01515 (A)</th>
<th>BICO: Writing to parameter not permitted as the master control is active</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>NONE</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>When changing the number of CDS or when copying from CDS, the master control is active. If required, return the master control and repeat the operation.</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>A01590 (F)</th>
<th>Drive: Motor maintenance interval expired</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Fault cause: %1 bin</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31</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 selected service/maintenance interval for this motor was reached. Alarm value (r2124, interpret decimal): Motor data set number.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

**Remedy:** carry out service/maintenance and reset the service/maintenance interval (p0651).

**Reaction upon F:** NONE

**Acknowl. upon F:** IMMEDIATELY

---

**F01800**

**DRIVE-CLiQ: Hardware/configuration error**

**Message value:** %1

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**Drive object:** All objects

**Reaction:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, 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.

---

**A01839**

**DRIVE-CLiQ diagnostics: cable fault to the component**

**Message value:** Component number: %1

**Message class:** General drive fault (19)

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:**

The fault counter (r9936[0...199]) to monitor the DRIVE-CLiQ connections/cables has been incremented.

Alarm value (r2124, interpret decimal):

- Component number.

**Note:**

The component number specifies the component whose feeder cable from the direction of the Control Unit is faulted. The alarm automatically disappears after 5 seconds, assuming that no other data transfer error has occurred. See also: r9936 (DRIVE-CLiQ diagnostic error counter connection)

**Remedy:**
- check the corresponding DRIVE-CLiQ cables.
- check the electrical cabinet design and cable routing for EMC compliance
A01900 (F)  PB/PN: Configuration telegram error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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 PROFIsafe 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 PROFIsafe configuration for the interface set in p8815[1]. More than one PZD interface is operated with PROFIsafe.
501: PROFIsafe parameter error (e.g. F_dest).
502: PROFIsafe telegram does not match.
503: PROFIsafe 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 PROFIsafe.
Re alarm value = 255:
- Check configured drive objects.
4 Faults and alarms

4.2 List of faults and alarms

Re alarm value = 501:
- Check the set PROFIsafe address (p9610).
Re alarm value = 502:
- Check the set PROFIsafe 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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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 sampling time.
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 sampling time.
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 sampling time.
7: Master application cycle time Tmapc is not an integer multiple of the speed controller sampling time.
8: Bus reserve bus cycle time Tdp - data exchange time Tdx less than two current controller sampling times.
10: Instant of the setpoint acceptance To <= data exchange time Tdx + current controller sampling time
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 sampling times.

Remedy:
- Adapt the bus parameterization Tdp, Ti, To.
- adapt the sampling time for the current controller or speed controller.
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: -
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Reaction: OFF3 (IASC/DCTRLK, NONE, OFF1, OFF2, 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: p2040 (Fieldbus interface monitoring time), p2047 (PROFIBUS additional monitoring time)

Remedy:
Restore the bus connection and set the controller to RUN.
Note regarding PROFIBUS slave redundancy:
For operation on a Y link, it must be ensured that "DP alarm mode = DPV1" is set in the slave parameterization.

Reaction upon N: NONE
Acknowl. upon N: NONE
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F01911 (N, A)</td>
<td>PB/PN clock cycle synchronous operation clock cycle failure</td>
<td>-</td>
<td>Communication error to the higher-level control system (9)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>OFF1 (OFF3)</td>
<td>IMMEDIATELY</td>
<td>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).</td>
<td>- 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).</td>
</tr>
<tr>
<td>F01915 (N, A)</td>
<td>PB/PN clock cycle synchronous operation sign-of-life failure drive object 1</td>
<td>-</td>
<td>Communication error to the higher-level control system (9)</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>Group display for problems with the sign-of-life of the master (clock-cycle synchronous operation) on the drive object 1 (Control Unit). For central measurements, synchronism with the central master is lost.</td>
<td></td>
</tr>
<tr>
<td>A01920 (F)</td>
<td>PROFIBUS: Interruption cyclic connection</td>
<td>-</td>
<td>Communication error to the higher-level control system (9)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The cyclic connection to the PROFIBUS master is interrupted.</td>
<td>Establish the PROFIBUS connection and activate the PROFIBUS master in the cyclic mode. Note: If there is no communication to a higher-level control system, then p2030 should be set = 0 to suppress this message. See also: p2030 (Field bus int protocol selection)</td>
</tr>
</tbody>
</table>

Reaction upon A: NONE
Acknowl. upon A: NONE

Reaction upon N: NONE
Acknowl. upon N: NONE

Reaction upon A: NONE
Acknowl. upon A: NONE

Reaction upon F: NONE (OFF1)
Acknowl. upon F: IMMEDIATELY
4 Faults and alarms

4.2 List of faults and alarms

| Code     | Description                                      | Message Value | Message class                                      | Drive object | Reaction | Acknowledge | Cause                                                                 | Remedy                                                                 | Note                                                                 |
|----------|--------------------------------------------------|---------------|----------------------------------------------------|--------------|----------|-------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|                                                                     |
| A01921   | PROFIBUS: Receive setpoints after To             |               | Communication error to the higher-level control system (9) | All objects  | NONE     | NONE        | Output data of PROFIBUS master (setpoints) received at the incorrect instant in time within the PROFIBUS clock cycle. | - check bus configuration.                                          | To: Time of setpoint acceptance                                    |
|          |                                                  |               |                                                    |              |          |             |                                                                      | - check parameters for clock cycle synchronization (ensure To > Tdx). | Tdx: Data exchange time                                             |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       |                                                                     |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       |                                                                     |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       |                                                                     |
| A01930   | PB/PN current controller sampling time clock cycle synch. not equal | %1            | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | The current controller sampling time of all drives must be set the same for the clock cycle synchronous operation. | Set current controller sampling time to identical values (p0115[0]).     | PB: PROFIBUS                                                        |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       | PN: PROFINET                                                       |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       | See also: p0115                                                   |
| A01931   | PB/PN speed controller sampling time clock cycle synch. not equal | %1            | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | The speed controller sampling time of all drives must be set the same for the clock cycle synchronous operation. | Set the speed controller sampling times to identical values (p0115[1]). | PB: PROFIBUS                                                        |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       | PN: PROFINET                                                       |
|          |                                                  |               |                                                    |              |          |             |                                                                      |                                                                       | See also: p0115                                                   |
| A01940   | PB/PN clock cycle synchronism not reached        |               | Communication error to the higher-level control system (9) | All objects  | NONE     | NONE        | 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. |                                                                       |                                                                     |
### 4 Faults and alarms

#### 4.2 List of faults and alarms

- 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

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</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>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.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Check the master application and bus configuration.</td>
</tr>
</tbody>
</table>
| Note:          | PB: PROFIBUS
PN: PROFINET |

**A01943**  
PB/PN clock cycle signal error when establishing bus communication

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</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 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 |

**A01945**  
PROFIBUS: Connection to the Publisher failed

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</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:         | 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. |
## 4.2 List of faults and alarms

### F01946 (A) PROFIBUS: Connection to the Publisher aborted

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>Synchronization of the internal clock cycle to the global control telegram has failed. The internal clock cycle exhibits an unexpected shift.</td>
</tr>
</tbody>
</table>

**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

### F01951 CU SYNC: Synchronization application clock cycle missing

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</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>
</tr>
</tbody>
</table>

**Remedy:**
- 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.
4 Faults and alarms

4.2 List of faults and alarms

F01952 CU DRIVE-CLiQ: Synchronization of component not supported

- **Message value:** %1
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **Drive object:** All objects
- **Reaction:** OFF2 (NONE)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** 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.
- **Remedy:** Upgrade the firmware of the component specified in the fault value.
- **Note:** If required, also upgrade additional components in the DRIVE-CLiQ line.

A01953 CU SYNC: Synchronization not completed

- **Message value:** %1
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **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.
- **Note:** If the error occurs after the drive sampling times were changed, and if a Terminal Module 31 (TM31) is being used, the sampling times (p0115, p4099) should be set as integer multiples to the drive clock cycles (p0115).

F01954 CU DRIVE-CLiQ: Synchronization unsuccessful

- **Message value:** %1
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **Drive object:** All objects
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** 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.
- **Remedy:**
  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.
     - 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
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **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.
### 4.2 List of faults and alarms

**A01990 (F) USS: PZD configuration error**

- **Message value**: %1
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
- **Reaction**: NONE
- **Acknowledge**: NONE
- **Cause**: The configuration of the process data (PZD) for the USS protocol is incorrect.
  - Alarm value (r2124, interpret decimal): 2: PZD amount (p2022) too great for the first drive object (p978[0]).
  - The number of possible PZD items in a drive object is determined by the number of indices in r2050/p2051.
- **Remedy**: Check the amount of USS PZD (p2022) and the maximum PZD amount (r2050/p2051) for the first drive object (p978[0]).
- **Reaction upon F**: NONE (OFF1)
- **Acknowl. upon F**: IMMEDIATELY

**A02000 Function generator: Start not possible**

- **Message value**: -
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **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
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: All objects
- **Reaction**: NONE
- **Acknowledge**: NONE
- **Cause**: The drive object specified for connection does not exist.
- **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.

**A02006 Function generator: No drive specified for connection**

- **Message value**: -
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: All objects
- **Reaction**: NONE
- **Acknowledge**: NONE
- **Cause**: No drive specified for connection in p4815.
### 4 Faults and alarms

#### 4.2 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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A02007</td>
<td>Function generator: Drive not SERVO / VECTOR / DC_CTRL</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The drive object specified for connection is not a SERVO / VECTOR or DC_CTRL.</td>
<td>Use a SERVO / VECTOR / DC_CTRL drive object with the corresponding number.</td>
</tr>
<tr>
<td>A02008</td>
<td>Function generator: Drive specified a multiple number of times</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The drive object specified for connection is already specified.</td>
<td>Specify a different drive object.</td>
</tr>
<tr>
<td>A02009</td>
<td>Function generator: Illegal mode</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>The set operating mode (p1300) of the drive object is not permissible when using the function generator.</td>
<td>Change the operating mode for this drive object to p1300 = 20 (encoderless speed control) or p1300 = 21 (speed control with encoder).</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

A02010  Function generator: Speed setpoint from the drive is not zero
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The speed setpoint of a drive selected for connection is greater than the value for the standstill detection set using p1226.
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The master control and/or enable signals are missing to connect to the specified drive.
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.
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)
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
<th>Note</th>
</tr>
</thead>
</table>
| A02020 | Function generator: Parameter cannot be changed                               | -             | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | This parameter setting cannot be changed when the function generator is active (p4800 = 1).  
  See also: p4810, p4812, p4813, p4820, p4821, p4822, p4823, p4824, p4825, p4826, p4827, p4828, p4829 | - 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                                         | -             | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | The value for the period is too short.  
  See also: p4821 (Function generator period) | 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                                     | -             | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | The selected pulse width is too high.  
  The pulse width must be less than the period duration.  
  See also: p4822 (Function generator pulse width) | 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                              | -             | Error in the parameterization / configuration / commissioning procedure (18) | All objects  | NONE     | NONE        | The specified physical address is zero.  
  See also: p4812 (Function generator physical address) |                                                                                                                                                                                                                     |
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault ID</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
<th>Note</th>
</tr>
</thead>
</table>
| A02040   | Function generator: Illegal value for offset | -              | Error in the parameterization / configuration / commissioning procedure (18) | All objects | NONE     | NONE        | The value for the offset is higher than the value for the upper limit or lower than the value for the lower limit. | Adjust the offset value accordingly. | 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 lower limit), p4829 (Function generator upper limit) |
| A02041   | Function generator: Illegal value for bandwidth | -              | Error in the parameterization / configuration / commissioning procedure (18) | All objects | NONE     | NONE        | 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:  
\[
\text{Bandwidth}_{\text{max}} = \frac{1}{2 \times \text{time slice clock cycle}} \\
\text{Bandwidth}_{\text{min}} = \text{Bandwidth}_{\text{max}} / 100000 
\]  
Example:  
Assumption: \( p4830 = 125 \, \mu\text{s} \)  
\[ \rightarrow \text{Bandwidth}_{\text{max}} = \frac{1}{2 \times 125 \, \mu\text{s}} = 4000 \, \text{Hz} \]  
\[ \rightarrow \text{Bandwidth}_{\text{min}} = 4000 \, \text{Hz} / 100000 = 0.04 \, \text{Hz} \]  
| | | | | | | | | Check the value for the bandwidth and adapt accordingly. | The alarm is reset as follows:  
- remove the cause of this alarm.  
- restart the function generator. | See also: p4823 (Function generator bandwidth), p4830 (Function generator time slice clock cycle) |
| A02047   | Function generator: Time slice clock cycle invalid | -              | Error in the parameterization / configuration / commissioning procedure (18) | All objects | NONE     | NONE        | The time slice clock cycle selected does not match any of the existing time slices. | | See also: p4830 (Function generator time slice clock cycle) |
4 Faults and alarms

4.2 List of faults and alarms

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: | - |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The trace has already been started. |
| Remedy: | Stop the trace and, if necessary, start again. |

Note: 
See also: p4700 (Trace control)

A02051 Trace: recording not possible as a result of know-how protection

| Message value: | involves %1 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The trace duration is too short. |
| Remedy: | Increase the value for the trace cycle. |

Note: 
The minimum is twice the value of the trace clock cycle. 
See also: p4720 (Trace recording cycle)

A02055 Trace: Recording time too short

| Message value: | - |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | The selected recording cycle is shorter than the selected basic clock cycle 0 (p0110[0]). |
| Remedy: | Increase the value for the trace cycle. |

Note: 
The minimum is twice the value of the trace clock cycle. 
See also: p4720 (Trace recording cycle)
4 Faults and alarms

4.2 List of faults and alarms

A02057  Trace: Time slice clock cycle invalid
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault ID</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A02061</td>
<td>Trace: Invalid signal</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>- 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)</td>
<td>Specify the signal to be traced. - check whether the relevant signal can be traced.</td>
</tr>
<tr>
<td>A02062</td>
<td>Trace: Invalid trigger signal</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>- 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)</td>
<td>Specify a valid trigger signal.</td>
</tr>
<tr>
<td>A02063</td>
<td>Trace: Invalid data type</td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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)</td>
<td>Use a valid data type.</td>
</tr>
<tr>
<td>A02070</td>
<td>Trace: Parameter cannot be changed</td>
<td>-</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>NONE</td>
<td>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</td>
<td>- stop the trace before parameterization. - if required, start the trace.</td>
</tr>
</tbody>
</table>
4 Faults and alarms
4.2 List of faults and alarms

A02075 Trace: Pretrigger time too long
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.

A02095 MTrace 0: multiple trace cannot be activated
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 0):
- measuring function
- long-time trace
- trigger condition "immediate recording start" (IMMEDIATE)
- trigger condition "start with function generator" (FG_START)
Remedy: - if required, deactivate the multiple trace (p4840[0] = 0).
- deactivate function or setting that is not permissible
See also: p4840 (MTrace cycle number setting)

A02096 MTrace 0: cannot be saved
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 0). A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- card is not inserted or is blocked by a mounted USB drive.
3: data save operation to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.
See also: p4840 (MTrace cycle number setting)
4 Faults and alarms

4.2 List of faults and alarms

Remedy:
- insert or remove the memory card.
- use a larger memory card.
- configure a longer trace time or use an endless trace.
- avoid saving parameters while a multiple trace is running.
- check whether other functions are presently accessing measurement result files.

A02097  MTrace 1: multiple trace cannot be activated
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: The following functions or settings are not permissible in conjunction with a multiple trace (trace recorder 1):
- measuring function
- long-time trace
- trigger condition "immediate recording start" (IMMEDIATE)
- trigger condition "start with function generator" (FG_START)
Remedy:
- if required, deactivate the multiple trace (p4840[1] = 0).
- deactivate function or setting that is not permissible
See also: p4840 (MTrace cycle number setting)

A02098  MTrace 1: cannot be saved
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: It is not possible to save the measurement results of a multiple trace on the memory card (trace recorder 1). A multiple trace is not started or is canceled.
Alarm value (r2124, interpret decimal):
1: Memory card cannot be accessed.
- card is not inserted or is blocked by a mounted USB drive.
3: data save operation to slow.
- a second trace has been completed before the measurement results of the first trace were able to be saved.
- writing the measurement result files to the card is blocked by the parameter save.
4: Data save operation canceled.
- for instance, the file required for the data save operation was not able to be found.
See also: p4840 (MTrace cycle number setting)
Remedy:
- insert or remove the memory card.
- use a larger memory card.
- configure a longer trace time or use an endless trace.
- avoid saving parameters while a multiple trace is running.
- check whether other functions are presently accessing measurement result files.

A02099  Trace: Insufficient Control Unit memory
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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)

**A02150 OA: Application cannot be loaded**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Hardware / software error (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>The system was not able to load an OA application.</td>
</tr>
<tr>
<td>Alarm value (r2124, interpret hexadecimal):</td>
<td>16:</td>
</tr>
<tr>
<td></td>
<td>The interface version in the DCB user library is not compatible to the DCC standard library that has been loaded. 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 firmware to later version.</td>
</tr>
<tr>
<td></td>
<td>- contact the Hotline.</td>
</tr>
<tr>
<td>Re alarm value = 16:</td>
<td>Load a compatible DCB user library (compatible to the interface of the DCC standard library).</td>
</tr>
<tr>
<td>Note:</td>
<td>OA: Open Architecture</td>
</tr>
<tr>
<td></td>
<td>See also: r4950, r4955, p4956, r4957</td>
</tr>
</tbody>
</table>

**F02151 (A) OA: Internal software error**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Hardware / software error (1)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>All objects</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>An internal software error has occurred within an OA application.</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 firmware to later version.</td>
</tr>
<tr>
<td></td>
<td>- contact the Hotline.</td>
</tr>
<tr>
<td></td>
<td>- replace the Control Unit.</td>
</tr>
<tr>
<td>Note:</td>
<td>OA: Open Architecture</td>
</tr>
<tr>
<td></td>
<td>See also: r4950, r4955, p4956, r4957</td>
</tr>
</tbody>
</table>

**F02152 (A) OA: Insufficient memory**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Hardware / software error (1)</td>
</tr>
<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>
<tr>
<td>Cause:</td>
<td>Too many functions have been configured on this Control Unit (e.g. too many drives, function modules, data sets, OA applications, blocks, etc).</td>
</tr>
<tr>
<td>Fault value (r0949, interpret decimal):</td>
<td>Only for internal Siemens troubleshooting.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

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

Reaction upon A: NONE
Acknowl. upon A: NONE

F03000  NVRAM fault on action
Message value: %1
Message class: Hardware / software error (1)
Drive object: All objects
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause:
A fault occurred during execution of action p7770 = 1 or 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.
  yy = 4:
No data available to load.
See also: p7770 (NVRAM action)
Remedy:
- Perform the remedy according to the results of the troubleshooting.
- If necessary, start the action again.

F03001  NVRAM checksum incorrect
Message value: %1
Message class: Hardware / software error (1)
Drive object: All objects
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
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
Message class: Hardware / software error (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):
  yxxx dex
  y = Only for internal Siemens troubleshooting
  xxx = component number (p0151)
4 Faults and alarms

4.2 List of faults and alarms

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.

Reaction upon A: NONE
Acknowl. upon A: NONE

A03501 TM: Sampling time change

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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) Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150
Reaction: NONE
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 (X521.1/X521.2)
Index x = 1: Analog input 1 (X521.3/X521.4)
Fault value (r0949, interpret decimal):
yxxx dec
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 injected 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

F03505 (N, A) Analog input wire breakage

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (NONE, OFF2)
Acknowledge: IMMEDIATELY (POWER ON)
Cause: The wire-break monitoring for an analog input has responded.
Remedy: Check the wiring for interruptions.
4 Faults and alarms

4.2 List of faults and alarms

Faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F03505 (N, A)</td>
<td>TM: Analog input wire breakage</td>
</tr>
</tbody>
</table>

- **Message value:** %1
- **Message class:** External measured value / signal state outside the permissible range (16)
- **Drive object:** TM15DI_DO, TM31
- **Reaction:** NONE
- **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 (X521.1/X521.2)
  - Index x = 1: Analog input 1 (X521.3/X521.4)
- **Fault value (r0949, interpret decimal):**
  - yxxx dec
  - 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.

A03510 (F, N) Calibration data not plausible

- **Message value:** %1
- **Message class:** Hardware / software error (1)
- **Drive object:** CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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 wiring.
  - If it reoccurs, then replace the module.
  - In principle, operation could continue.
  - The analog channel involved possibly does not achieve the specified accuracy.
## 4 Faults and alarms

### 4.2 List of faults and alarms

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<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03510 (F, N)</td>
<td><strong>TM: Calibration data not plausible</strong></td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>NONE</td>
<td>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.</td>
<td>- power down/power up the power supply for the Control Unit. - check the DRIVE-CLiQ wiring. Note: If it reoccurs, then replace the module. In principle, operation could continue. The analog channel involved possibly does not achieve the specified accuracy.</td>
</tr>
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</tr>
<tr>
<td>F03590 (N, A)</td>
<td><strong>TM: Module not ready</strong></td>
<td>%1</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>All objects</td>
<td>NONE</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>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.</td>
<td>- check the 24 V power supply. - check the DRIVE-CLiQ wiring. - check whether the sampling time of the drive object involved is not equal to zero (p4099[0]).</td>
</tr>
</tbody>
</table>
## 4 Faults and alarms

### 4.2 List of faults and alarms

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<tr>
<td>F07082</td>
<td>Macro: Execution not possible</td>
<td>Fault cause: %1, supplementary information: %2, preliminary parameter number: %3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Message class: Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drive object: All objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reaction: NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acknowledge: IMMEDIATELY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause: The macro cannot be executed. Fault value (r0949, interpret hexadecimal): cccccbaa hex: cccc = preliminary parameter number, bb = supplementary information, aa = fault cause</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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 &quot;DEFAULT&quot;. 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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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)</td>
</tr>
<tr>
<td>F07083</td>
<td>Macro: ACX file not found</td>
<td>Parameter: %1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Message class: Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Drive object: All objects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reaction: NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Acknowledge: IMMEDIATELY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See also: p0015, p0700, p1000 (Macro Connector Inputs (CI) for speed setpoints), p1500 (Macro Connector Inputs (CI) for torque setpoints)</td>
</tr>
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</table>
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.

F07086 Units changeover: Parameter limit violation due to reference value change

Message value: Parameter: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
See also: p0596 (Technological unit reference quantity), p2000 (Reference speed), p2001 (Reference voltage), p2002 (Reference current), p2003 (Reference torque), r2004 (Reference power)
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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: p0595 (Technological unit selection)
Remedy: Check the adapted parameter values and if required correct.
See also: r9451 (Units changeover adapted parameters)
## 4 Faults and alarms

### 4.2 List of faults and alarms

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<td>A07089</td>
<td>Changing over units: Function module activation is blocked because the units have been changed over</td>
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<tr>
<td>F07110</td>
<td>Drive: Sampling times and basic clock cycle do not match</td>
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<td>A07200</td>
<td>Drive: Master control ON command present</td>
</tr>
<tr>
<td>F07220</td>
<td>Drive: Master control by PLC missing</td>
</tr>
</tbody>
</table>

**A07089**  
**Changing over units: Function module activation is blocked because the units have been changed over**

- **Message value:** -
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **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.
- **Remedy:** Restore units that have been changed over to the factory setting.

**F07110**  
**Drive: Sampling times and basic clock cycle do not match**

- **Message value:** Parameter: %1
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **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:** -
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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:** -
- **Message class:** Communication error to the higher-level control system (9)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (NONE, OFF2, OFF3, 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).
  - 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 binector 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.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
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</thead>
</table>
| A07350 (F) | Drive: Measuring probe parameterized to a digital output | %1 | Error in the parameterization / configuration / commissioning procedure (18) | All objects | NONE | NONE | The measuring probe is connected to a bi-directional digital input/output and the terminal is set as output. | - set the terminal as input (p0728).  
- de-select the measuring probe (p0488, p0489, p0580). |
| F07426 (A) | Technology controller actual value limited | %1 | Application / technological function faulted (17) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) | IMMEDIATELY | The actual value for the technology controller, interconnected via connector input p2264, has reached a limit. | - 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) |
| A07428 (N) | Technology controller parameterizing error | %1 | Error in the parameterization / configuration / commissioning procedure (18) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | NONE | NONE | The technology controller has a parameterizing error. | The upper output limit in p2291 is set lower than the lower output limit in p2292. |
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<th>Acknowledge</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F07447</td>
<td>Load gear: Position tracking, maximum actual value exceeded</td>
<td>Component number: %1, encoder data set: %2, drive data set: %3</td>
<td>Application / technological function faulted (17)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>- 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)</td>
</tr>
<tr>
<td>F07448 (A)</td>
<td>Load gear: Position tracking, linear axis has exceeded the maximum range</td>
<td>-</td>
<td>Application / technological function faulted (17)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (NONE, OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>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]. 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.</td>
</tr>
<tr>
<td>F07449 (A)</td>
<td>Load gear: Position tracking actual position outside tolerance window</td>
<td>%1</td>
<td>Application / technological function faulted (17)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (NONE, OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Remedy:**
- Re alarm value = 1:
  - Set the output limit in p2291 higher than in p2292.
  - See also: p2291 (Technology controller maximum limiting), p2292 (Technology controller minimum limiting)

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**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 * p2721 * 2^p0419

Fault value (r0949, interpret hexadecimal):
- cc = drive data set
- bb = component number
- aa = encoder data set

See also: p0408 (Rotary encoder pulse number), 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)
4 Faults and alarms

4.2 List of faults and alarms

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 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

F07500 Drive: Power unit data set PDS not configured
Message value: Drive data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: TM150, TM15DI_DO, TM31
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.

F07502 Drive: Encoder Data Set EDS not configured
Message value: Drive data set: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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).
4 Faults and alarms
4.2 List of faults and alarms

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).

A07504 Drive: Motor data set is not assigned to a drive data set
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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: In the drive data sets, assign the non-assigned motor data set using the MDS number [p0186[0...n]].
- check whether all of the motor data sets are assigned to drive data sets.
- if required, delete superfluous motor data sets.
- if required, set up new drive data sets and assign to the corresponding motor data sets.

F07509 Drive: Component assignment missing
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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):
nnmmxxyy
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: p0141 (Encoder interface (Sensor Module) component number), p0142 (Encoder component number), p0187 (Encoder 1 encoder data set number), p0188 (Encoder 2 encoder data set number)

F07510 Drive: Identical encoder in the drive data set
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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.
4.2 List of faults and alarms

F07511  Drive: Encoder used a multiple number of times

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
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):
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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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)

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]

F07515  Drive: Power unit and motor incorrectly connected

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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)
4 Faults and alarms
4.2 List of faults and alarms

**F07516**  
**Drive:** Re-commission the data set

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
<tr>
<td>Fault value (r0949, interpret decimal):</td>
<td>Drive data set to be re-commissioned.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Commission the drive data set specified in the fault value (r0949).</td>
</tr>
</tbody>
</table>

**F07517**  
**Drive:** Encoder data set changeover incorrectly parameterized

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>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</td>
</tr>
</tbody>
</table>

**F07518**  
**Drive:** Motor data set changeover incorrectly parameterized

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>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: xxxx: First DDS with assigned MDS, yyyy: Second DDS with assigned MDS</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Correct the parameterization of the motor data sets.</td>
</tr>
</tbody>
</table>

**A07530**  
**Drive:** Drive Data Set DDS not present

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The selected drive data set is not available (p0837 &gt; p0180). The drive data set was not changed over. See also: p0180 (Number of Drive Data Sets (DDS)), p0820 (Drive Data Set selection DDS bit 0), p0821 (Drive Data Set selection DDS bit 1), r0837 (Drive Data Set DDS selected)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- select the existing drive data set. - set up additional drive data sets.</td>
</tr>
</tbody>
</table>
### A07531  Drive: Command Data Set CDS not present

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</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>The selected command data set is not available (p0836 &gt; p0170). The command data set was not changed over. See also: p0810 (Command data set selection CDS bit 0), r0836 (Command Data Set CDS selected)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- select the existing command data set. - set up additional command data sets.</td>
</tr>
</tbody>
</table>

### A07541  Drive: Data set changeover not possible

<table>
<thead>
<tr>
<th>Message value:</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Application / technological function faulted (17)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>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 &lt; p0348). See also: r0063 (Speed actual value)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Reduce the speed to below the speed at the start of field weakening (r0063 &lt; p0348).</td>
</tr>
</tbody>
</table>

### A07550 (F, N) Drive: Not possible to reset encoder parameters

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Hardware / software error (1)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- repeat the operation. - check the DRIVE-CLiQ connection.</td>
</tr>
<tr>
<td>Reaction upon F:</td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</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>

### FO7551  Drive encoder: No commutation angle information

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1, drive data set: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (IASC/DCBRK)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY (POWER ON)</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, 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):
cccccbbaa 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, SM120, SME20, SME25).
cccc = 10: DRIVE-CLiQ encoder (is supported by DQI).
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, SM110).
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).

F07553 (A) Drive encoder: Sensor Module configuration not supported

Message value: Encoder data set: %1, first incorrect bit: %2, incorrect parameter: %3
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, 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 r0456 (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):
ddccbbbaa hex
aa: encoder data set number
bb: first incorrect bit
4 Faults and alarms

4.2 List of faults and alarms

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).
- check the pole position identification routine (p1982).
- use the matching encoder evaluation (r0458, r0459).

See also: p0430 (Sensor Module configuration), p0437 (Sensor Module configuration extended), r0458 (Sensor Module properties), r0459 (Sensor Module properties extended)

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

Message class:
Error in the parameterization / configuration / commissioning procedure (18)

Drive object:
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

Reaction:
OFF2 (IASC/DCTRL, NONE, OFF1, OFF3, 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
bb = component number
cc = drive data set
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:
For fault value 0:
- use an absolute encoder.
For fault value 1:
- use a Control Unit with sufficient NVRAM.
Re fault value = 2, 4:
- if necessary, de-select the position tracking (p0411 for the measuring gear, p2720 for the load gear).
For fault value 3:
- 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. These parameters must be the same in all drive data sets, which use the same motor encoder (p187).

Reaction upon A: NONE
Acknowl. upon A: NONE
4 Faults and alarms

4.2 List of faults and alarms

F07556  Measuring gear: Position tracking, maximum actual value exceeded

Message value:  Component number: %1, encoder data set: %2
Message class:  Position/speed actual value incorrect or not available (11)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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):
aaaaayyy xxy hex: yy = component number, xx = encoder data set
See also: p0408 (Rotary encoder pulse number), 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))

F07560  Drive encoder: Number of pulses is not to the power of two

Message value:  Encoder data set: %1
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction:  OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  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.
Remedy:  - check the parameterization (p0408, p0404.1, r0458.5).
- upgrade the Sensor Module firmware if necessary

F07561  Drive encoder: Number of multiturn pulses is not to the power of two

Message value:  Encoder data set: %1
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction:  OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  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.
Remedy:  - check the parameterization (p0421, p0404.1, r0458.5).
- upgrade the Sensor Module firmware if necessary

F07562 (A)  Drive, encoder: Position tracking, incremental encoder not possible

Message value:  Fault cause: %1, component number: %2, encoder data set: %3
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction:  OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge:  IMMEDIATELY (POWER ON)
Cause:  The requested position tracking for incremental encoders is not supported.
Fault value (r0949, interpret hexadecimal):
ccccbbaa hex
aa = encoder data set
bb = component number
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 hex = 0 dec</td>
<td>The encoder type does not support the &quot;Position tracking incremental encoder&quot; function.</td>
</tr>
<tr>
<td>01 hex = 1 dec</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>04 hex = 4 dec</td>
<td>A linear encoder is used that does not support the &quot;position tracking&quot; function.</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).

**Reac. upon A:** NONE
**Acknowl. upon A:** NONE

---

**F07563 (A)**

**Drive encoder: XIST1_ERW configuration incorrect**

**Message value:** Fault cause: %1, encoder data set: %2

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)

**Acknowledge:** IMMEDIATELY (POWER ON)

**Cause:** An incorrect configuration was identified for the "Absolute position for incremental encoder" function.

**Fault value (r0949, interpret decimal):**

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).

**Reac. upon A:** NONE
**Acknowl. upon A:** NONE

---

**A07565 (F, N)**

**Drive: Encoder error in PROFIdrive encoder interface 1**

**Message value:** %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** An encoder error was signaled for encoder 1 via the PROFIdrive 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).

**Reac. upon F:** NONE (OFF1, OFF2, OFF3)
**Acknowl. upon F:** IMMEDIATELY
**Reac. upon N:** NONE
**Acknowl. upon N:** NONE
### A07566 (F, N)
**Drive:** Encoder error in PROFIdrive encoder interface 2

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>An encoder error was signaled for encoder 2 via the PROFIdrive encoder interface (G2_ZSW.15). Alarm value (r2124, interpret decimal): Error code from G2_XIST2, refer to the description regarding r0483.</td>
</tr>
<tr>
<td>Remedy</td>
<td>Acknowledge the encoder error using the encoder control word (G2_STW.15 = 1).</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### A07567 (F, N)
**Drive:** Encoder error in PROFIdrive encoder interface 3

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>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.</td>
</tr>
<tr>
<td>Remedy</td>
<td>Acknowledge the encoder error using the encoder control word (G3_STW.15 = 1).</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### A07569 (F)
**Enc identification active**

<table>
<thead>
<tr>
<th>Message value</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>During encoder identification (waiting) with p0400 = 10100, the encoder could still 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.</td>
</tr>
</tbody>
</table>
| Remedy        | Encoder identification must be supported by the encoder and is possible in the following cases:  
- Encoder with EnDat interface.  
- Encoder with SSI interface.  
- Motor with DRIVE-CLiQ.  
- check and, if necessary, connect the encoder / encoder cable.  
- check and, if necessary, establish the DRIVE-CLiQ connection.  
- for SSI encoders, carry out the required operator actions (see the Function Manual).  
- in the case of encoders that cannot be identified (e.g. encoders without EnDat interface), enter the correct encoder type in p0400. |
4 Faults and alarms

4.2 List of faults and alarms

N07570 (F) Encoder identification data transfer running

- Message value: -
- Message class: Error in the parameterization / configuration / commissioning procedure (18)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: OFF2
- Acknowledge: NONE
- Cause: The encoder type was automatically determined using p0400 = 10100.
  This fault causes the pulses to be suppressed - this is necessary to transfer the encoder parameterization to p0400ff.
  See also: p0400 (Encoder type selection)
- Remedy: The fault can be acknowledged without any additional measures.

F07575 Drive: Motor encoder not ready

- Message value: -
- Message class: Position/speed actual value incorrect or not available (11)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: 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.

A07580 (F, N) Drive: No Sensor Module with matching component number

- Message value: Encoder data set: %1
- Message class: Error in the parameterization / configuration / commissioning procedure (18)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- 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: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
- Acknowl. upon F: IMMEDIATELY (POWER ON)
- Reaction upon N: NONE
- Acknowl. upon N: NONE

A07850 (F) External alarm 1

- Message value: -
- Message class: External measured value / signal state outside the permissible range (16)
- Drive object: All objects
- Reaction: NONE
- Acknowledge: NONE
- Cause: The condition for "External alarm 1" is satisfied.
  Note:
  The "External alarm 1" is initiated by a 1/0 edge via binector input p2112.
  See also: p2112 (External alarm 1)
- Remedy: Eliminate the causes of this alarm.
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction upon F:</th>
<th>Acknowl. upon F:</th>
<th>Cause</th>
<th>Note</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A07851 (F)</td>
<td>External alarm 2</td>
<td>-</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>All objects</td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The condition for “External alarm 2” is satisfied.</td>
<td>The “External alarm 2” is initiated by a 1/0 edge via binector input p2116.</td>
<td>Eliminate the causes of this alarm.</td>
</tr>
<tr>
<td>A07852 (F)</td>
<td>External alarm 3</td>
<td>-</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>All objects</td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The condition for “External alarm 3” is satisfied.</td>
<td>The “External alarm 3” is initiated by a 1/0 edge via binector input p2117.</td>
<td>Eliminate the causes of this alarm.</td>
</tr>
<tr>
<td>F07860 (A)</td>
<td>External fault 1</td>
<td>-</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>All objects</td>
<td>OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The condition for “External fault 1” is satisfied.</td>
<td>The “External fault 1” is initiated by a 1/0 edge via binector input p2106.</td>
<td>- eliminate the causes of this fault.</td>
</tr>
<tr>
<td>F07861 (A)</td>
<td>External fault 2</td>
<td>-</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>All objects</td>
<td>OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The condition for “External fault 2” is satisfied.</td>
<td>The “External fault 2” is initiated by a 1/0 edge via binector input p2107.</td>
<td>- acknowledge fault.</td>
</tr>
</tbody>
</table>
### F07862 (A)  External fault 3
- **Message value:**  
- **Message class:** External measured value / signal state outside the permissible range (16)
- **Drive object:** All objects
- **Reaction:** OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** The condition for "External fault 3" is satisfied.  
  Note:  
  The "External fault 3" is initiated by a 1/0 edge via the following parameters.
  - AND logic operation, binector input p2108, p3111, p3112.
  - switch-on delay p3110.
  See also: p2108, p3110, p3111, p3112
- **Remedy:**  
  - eliminate the causes of this fault.
  - acknowledge fault.
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE

### F08000 (N, A)  TB: +/-15 V power supply faulted
- **Message value:** %1
- **Message class:** Supply voltage fault (undervoltage) (3)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
- **Reaction:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** 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.
- **Remedy:**  
  - replace Terminal Board 30.
  - replace Control Unit.
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE

### F08010 (N, A)  TB: Analog-digital converter
- **Message value:**  
- **Message class:** Hardware / software error (1)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
- **Reaction:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
- **Acknowledge:** IMMEDIATELY (POWER ON)
- **Cause:** The analog/digital converter on Terminal Board 30 has not supplied any converted data.
- **Remedy:**  
  - check the power supply.
  - replace Terminal Board 30.
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE
F08500 (A)  COMM BOARD: Monitoring time configuration expired
Message value:  %1
Message class:  Communication error to the higher-level control system (9)
Drive object:  All objects
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause:  The monitoring time for the configuration has expired.
Fault value (r0949, interpret decimal):
0: The transfer time of the send configuration data has been exceeded.
1: The transfer time of the receive configuration data has been exceeded.
Remedy:  Check communications link.
Reaction upon A: NONE
Acknowl. upon A: NONE

F08501 (N, A)  PN/COMM BOARD: Setpoint timeout
Message value:  -
Message class:  Communication error to the higher-level control system (9)
Drive object:  All objects
Reaction:  OFF3 (IASC/DCBRK, NONE, OFF1, OFF2, STOP2)
Acknowledge: IMMEDIATELY
Cause:  The reception of setpoints from the COMM BOARD has been interrupted.
- bus connection interrupted.
- controller switched off.
- controller set into the STOP state.
- COMM BOARD defective.
Remedy:  - Restore the bus connection and set the controller to RUN.
- check the set monitoring time if the error persists (p2040).
See also: p8840 (COMM BOARD monitoring time)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F08502 (A)  PN/COMM BOARD: Monitoring time sign-of-life expired
Message value:  -
Message class:  Communication error to the higher-level control system (9)
Drive object:  All objects
Reaction:  OFF1 (OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause:  The monitoring time for the sign-of-life counter has expired.
The connection to the COMM BOARD was interrupted.
Remedy:  - check communications link.
- check COMM BOARD.
Reaction upon A: NONE
Acknowl. upon A: NONE

A08504 (F)  PN/COMM BOARD: Internal cyclic data transfer error
Message value:  %1
Message class:  Communication error to the higher-level control system (9)
Drive object:  All objects
Reaction:  NONE
Acknowledge: NONE
Cause:  The cyclic actual and/or setpoint values were not transferred within the specified times.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
4 Faults and alarms

4.2 List of faults and alarms

**Remedy:** Check the parameterizing telegram (Ti, To, Tdp, etc.).

**Reaction upon F:** NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY

---

### F08510 (A) PN/COMM BOARD: Send configuration data invalid

**Message value:** %1

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** OFF1 (OFF2, OFF3)

**Acknowledge:** 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) PN/COMM BOARD: Receive configuration data invalid

**Message value:** %1

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** All objects

**Reaction:** NONE

**Acknowledge:** 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).

Additional values:

Only for internal Siemens troubleshooting.

**Remedy:** Check the receive configuration data.

Re alarm value = 1, 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.

Re alarm value = 2:

- 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:** NONE (OFF1, OFF2, OFF3)

**Acknowl. upon F:** IMMEDIATELY
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Cause</th>
<th>Remedy</th>
<th>Reaction upon F</th>
<th>Acknowl. upon F</th>
</tr>
</thead>
<tbody>
<tr>
<td>A08520 (F)</td>
<td>PN/COMM BOARD: Non-cyclic channel error</td>
<td>The memory or the buffer status of the non-cyclic channel has an error. Alarm value (r2124, interpret decimal): 0: Error in the buffer status. 1: Error in the memory.</td>
<td>Check communications link.</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>A08526 (F)</td>
<td>PN/COMM BOARD: No cyclic connection</td>
<td>There is no cyclic connection to the control.</td>
<td>Establish the cyclic connection and activate the control with cyclic operation. For PROFINET, check the parameters &quot;Name of Station&quot; and &quot;IP of Station&quot; (r61000, r61001). 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>
<td>NONE (OFF1)</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>A08530 (F)</td>
<td>PN/COMM BOARD: Message channel error</td>
<td>The memory or the buffer status of the message channel has an error. Alarm value (r2124, interpret decimal): 0: Error in the buffer status. 1: Error in the memory.</td>
<td>Check communications link.</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>A08550</td>
<td>PZD Interface Hardware assignment error</td>
<td>The assignment of the hardware to the PZD interface has been incorrectly parameterized. Alarm value (r2124, interpret decimal): 3: Assigned COMM BOARD missing. See also: p8839 (PZD interface hardware assignment)</td>
<td>Check the parameterization and if required, correct (p8839).</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
A08550  PZD Interface Hardware assignment error

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: NONE
Acknowledge: NONE
Cause: The assignment of the hardware to the PZD interface has been incorrectly parameterized.
Alarm value (r2124, interpret decimal):
1: Only one of the two indices is not equal to 99 (automatic).
2: Both PZD interfaces are assigned to the same hardware.
3: Assigned COMM BOARD missing.
4: CBC10 is assigned to interface 1.
See also: p8839 (PZD interface hardware assignment)
Remedy: Check the parameterization and if required, correct (p8839).

A08564  CBE20: Syntax error in configuration file

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: 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.
Remedy: - Check the CBE20 configuration (p8940 and following), correct if necessary, and activate (p8945 = 2).
Note: The configuration is not applied until the next POWER ON!
- reconfigure the CBE20 (e.g. using the STARTER commissioning software)
See also: p8945 (CBE2x interface configuration)

A08565  PNCOMM BOARD : Consistency error affecting adjustable parameters

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: A consistency error was detected when activating the configuration (p8945) for the Communication Board Ethernet 20 (CBE20).
Alarm value (r2124, interpret decimal):
0: general consistency error
1: error in the IP configuration (IP address, subnet mask or standard gateway).
2: Error in the station names.
3: DHCP was not able to be activated, as a cyclic PROFINET connection already exists.
4: a cyclic PROFINET connection is not possible as DHCP is activated.
Note: For all alarm values, the following applies: currently set configuration has not been activated.
DHCP: Dynamic Host Configuration Protocol
See also: p8940 (CBE2x Name of Station), p8941 (CBE2x IP Address of Station), p8942 (CBE2x Default Gateway of Station), p8943 (CBE2x Subnet Mask of Station), p8944 (CBE2x DHCP Mode)
Remedy: - Check the required interface configuration (p8940 and following), correct if necessary, and activate (p8945).
or
- reconfigure the station via the "Edit Ethernet node” screen form (e.g. with STARTER commissioning software).
See also: p8945 (CBE2x interface configuration)
### 4 Faults and alarms
#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>A13000</th>
<th>License not adequate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</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:** | - 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. |

<table>
<thead>
<tr>
<th>A13001</th>
<th>Error in license checksum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</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>When checking the checksum of the license key, an error was detected.</td>
</tr>
</tbody>
</table>
| **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). |

<table>
<thead>
<tr>
<th>F13009</th>
<th>Licensing OA application not licensed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>All objects</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>At least one OA application which is under license does not have a license.</td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>Refer to r4955 and p4955 for information about the installed OA applications.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

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
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
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
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
Drive object:  All objects
Reaction:  NONE
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).
See also: p7765 (KHP configuration)

Remedy:
For fault value = 0:
- Insert the correct memory card and carry out POWER ON.
Re 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:
In general, the copy protection can only be changed when know-how protection is deactivated.
KHP: Know-How Protection
See also: p3981 (Faults acknowledge drive object), p7765 (KHP configuration)

F13101  Know-how protection: Copy protection cannot be activated
Message value:  %1
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
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.
4 Faults and alarms

4.2 List of faults and alarms

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 configuration)

F13102  Know-how protection: Consistency error of the protected data
Message value:  %1
Message class:  Error in the parameterization / configuration / commissioning procedure (18)
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.
xxxx = 3:
The project files, which were loaded into the file system via load (download from the memory card), are inconsistent.
Note:
KHP: Know-How Protection
Remedy:
- Replace the project on the memory card or replace project files for download from the memory card.
- Restore the factory setting and download again.

F30001  Power unit: Overcurrent
Message value:  Fault cause: %1 bin
Message class:  Power electronics faulted (5)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 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.
- 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).
4 Faults and alarms

4.2 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
Message class: DC link overvoltage (4)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 (p1240)
- 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.

F30003 Power unit: DC link voltage undervoltage

Message value: -
Message class: Infeed faulted (13)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 List of faults and alarms

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).

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30004</td>
<td>Power unit: Overtemperature heat sink AC inverter</td>
<td>%1</td>
<td>Power electronics faulted (5)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature of the power unit heat sink has exceeded the permissible limit value.</td>
<td></td>
</tr>
</tbody>
</table>
- 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.  
  Notice:  
  This fault can only be acknowledged after this alarm threshold for alarm A05000 has been undershot. |
| F30005     | Power unit: Overload I2t | %1 | Power electronics faulted (5) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | OFF2 | IMMEDIATELY | 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. |
| F30006     | Power unit: Thyristor Control Board | - | Power electronics faulted (5) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | OFF2 | IMMEDIATELY | 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). |
## 4 Faults and alarms

### 4.2 List of faults and alarms

- 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.

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<tr>
<th>F30008</th>
<th>Power unit: Sign-of-life error cyclic data</th>
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</thead>
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<tr>
<td>Message value:</td>
<td>-</td>
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<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>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).</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check the electrical cabinet design and cable routing for EMC compliance</td>
</tr>
<tr>
<td></td>
<td>- for projects with the VECTOR drive object, check whether p0117 = 6 has been set on the Control Unit.</td>
</tr>
<tr>
<td></td>
<td>- increase the fault threshold (p7789).</td>
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</tbody>
</table>

<table>
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<tr>
<th>A30010 (F)</th>
<th>Power unit: Sign-of-life error cyclic data</th>
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<tr>
<td>Message value:</td>
<td>-</td>
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<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Check the electrical cabinet design and cable routing for EMC compliance.</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>
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</tbody>
</table>

<table>
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<tr>
<th>F30011</th>
<th>Power unit: Line phase failure in main circuit</th>
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</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
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<tr>
<td>Message class:</td>
<td>Network fault (2)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (OFF1)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>At the power unit, the DC link voltage ripple has exceeded the permissible limit value. Possible causes:</td>
</tr>
<tr>
<td></td>
<td>- A line phase has failed.</td>
</tr>
<tr>
<td></td>
<td>- The 3 line phases are inadmissibly unsymmetrical.</td>
</tr>
<tr>
<td></td>
<td>- The capacitance of the DC link capacitor forms a resonance frequency with the line inductance and the reactor integrated in the power unit.</td>
</tr>
<tr>
<td></td>
<td>- the fuse of a phase of a main circuit has ruptured.</td>
</tr>
<tr>
<td></td>
<td>- A motor phase has failed.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
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<td></td>
<td>Only for internal Siemens troubleshooting.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

Remedy:
- check the main circuit fuses.
- Check whether a single-phase load is distorting the line voltages.
- Detune the resonant frequency with the line inductance by using an upstream line reactor.
- Dampen the resonant frequency with the line inductance by switching over the DC link voltage compensation in the software (see p1810) – or increase the smoothing (see p1806). However, this can have a negative impact on the torque ripple at the motor output.
- check the motor feeder cables.

F30012  Power unit: Temperature sensor heat sink wire breakage
Message value: %1
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

F30017  Power unit: Hardware current limit has responded too often
Message value: Fault cause: %1 bin
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
- 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):
Bit 0: Phase U
Bit 1: Phase V
Bit 2: Phase W

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.

F30021 Power unit: Ground fault
Message value: %1
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: The Power unit has detected a ground fault.
Possible causes:
- ground fault in the power cables.
- Ground fault at the motor.
- CT defective.
- when the brake closes, this causes the hardware DC current monitoring to respond.
- short-circuit at the braking resistor.
- the closed-loop circulating current control for devices connected in parallel (r0108.15 = 1) is either too slow or has been set too fast.
Note:
For power units, a ground fault is also emulated in r3113.5.
Fault value (r0949, interpret decimal):
0:
- the hardware DC current monitoring has responded.
- short-circuit at the braking resistor.
> 0:
Absolute value, total current amplitude \[20479 = r0209 \times 1.4142\].

Remedy:
- check the power cable connections.
- check the motor.
- check the CT.
- check the cables and contacts of the brake connection (a wire is possibly broken).
- check the braking resistor.

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).

**F30022 Power unit: Monitoring U_ce**

**Message value:** Fault cause: %1 bin
**Message class:** Ground fault / inter-phase short-circuit detected (7)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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.

**F30025 Power unit: Chip overtemperature**

**Message value:** %1
**Message class:** Power electronics faulted (5)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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 \([0.01 \, ^\circ \text{C}]\).
4 Faults and alarms

4.2 List of faults and alarms

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.

F30027 Power unit: Precharging DC link time monitoring

Message value: Enable signals: %1, Status: %2
Message class: Infeed faulted (13)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 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).
11) Infeed is defective and/or fuse has ruptured in the Motor Module (only Booksize units).

Fault value (r0949, interpret binary):
yyyyxxxx 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.
4 Faults and alarms

4.2 List of faults and alarms

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 booksize 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.

A30030 Power unit: Internal overtemperature alarm
Message value: %1
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: The temperature inside the drive converter has exceeded the permissible temperature limit.
- insufficient cooling, fan failure.
- overload.
- ambient temperature too high.
Alarm value (r2124, interpret decimal):
Only for internal Siemens troubleshooting.
Remedy:
- possibly use an additional fan.
- check whether the ambient temperature is in the permissible range.
Notice:
This fault can only be acknowledged once the permissible temperature limit minus 5 K has been fallen below.

A30031 Power unit: Hardware current limiting in phase U
Message value: -
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 List of faults and alarms

- 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 in phase V

Message value: -
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

A30033 Power unit: Hardware current limiting in phase W

Message value: -
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause:
Hardware current limit for phase W 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.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<th>Message class</th>
<th>Drive object</th>
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<th>Remedy</th>
<th>Notice</th>
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<tr>
<td>F30035</td>
<td>Power unit: Air intake overtemperature</td>
<td>%1</td>
<td>Power electronics faulted (5)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (OFF2)</td>
<td>IMMEDIATELY</td>
<td>The air intake in the power unit has exceeded the permissible temperature limit.</td>
<td>- check whether the fan is running.</td>
<td>This fault can only be acknowledged after this alarm threshold for alarm A05002 has been undershot.</td>
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<td>For air-cooled power units, the temperature limit is at 55 °C.</td>
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<td></td>
<td>- ambient temperature too high.</td>
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<td>- insufficient cooling, fan failure.</td>
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<td></td>
<td>Fault value (r0949, interpret decimal):</td>
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<td>Temperature [0.01 °C].</td>
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<tr>
<td>F30037</td>
<td>Power unit: Rectifier overtemperature</td>
<td>%1</td>
<td>Power electronics faulted (5)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF2</td>
<td>IMMEDIATELY</td>
<td>The temperature in the rectifier of the power unit has exceeded the permissible temperature limit.</td>
<td>- check whether the fan is running.</td>
<td>This fault can only be acknowledged after this alarm threshold for alarm A05004 has been undershot.</td>
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<td>- insufficient cooling, fan failure.</td>
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<td>- overload.</td>
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<td>- ambient temperature too high.</td>
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<td>- line supply phase failure.</td>
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<td>Fault value (r0949, interpret decimal):</td>
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<td>Temperature [0.01 °C].</td>
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<td>F30040</td>
<td>Power unit: Undervolt 24/48 V</td>
<td>Channel: %1, voltage: %2 [0.1 V]</td>
<td>Supply voltage fault (undervoltage) (3)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF2</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>The undervoltage threshold of the 24 V power supply for the power unit was fallen below for longer than 3 ms.</td>
<td>- check whether the fan is running.</td>
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<td>Note:</td>
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<td>- for booksize power units, the undervoltage threshold is 15 V.</td>
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<td>- for CU310-2, CUA31 and CUA32 the undervoltage threshold is 16 V.</td>
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<td>- for all other power units (e.g. S120M), the undervoltage threshold depends on the power unit, and is not displayed.</td>
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<td>Fault value (r0949, interpret hexadecimal):</td>
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<td></td>
<td></td>
<td>yyyyxxxx hex: yy = channel, xxxx = voltage [0.1 V]</td>
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<td></td>
<td>yy = 0: 24 V power supply</td>
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<td></td>
<td>yy = 1: 48 V power supply</td>
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</tr>
</tbody>
</table>
## 4 Faults and alarms

### 4.2 List of faults and alarms

| Remedy: | - Check the power supply of the power unit.  
|         | - carry out a POWER ON (power off/on) for the component. |

#### A30041 (F) Power unit: Undervolt 24/48 V alarm

- **Message value:** Channel: %1, voltage: %2 [0.1 V]  
- **Message class:** Supply voltage fault (undervoltage) (3)  
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
- **Reaction:** NONE  
- **Acknowledge:** NONE  
- **Cause:** For the power unit power supply, the lower threshold has been violated.  
  Alarm value (r2124, interpret hexadecimal):  
  yyyyy hex: yy = channel, xxxx = voltage [0.1 V]  
  yy = 0: 24 V power supply  
  yy = 1: 48 V power supply  
- **Remedy:** - Check the power supply of the power unit.  
  - carry out a POWER ON (power off/on) for the component.  
- **Reaction upon F:** NONE (OFF1, OFF2)  
- **Acknowl. upon F:** IMMEDIATELY (POWER ON)

#### A30042 Power unit: Fan has reached the maximum operating hours

- **Message value:** %1  
- **Message class:** Power electronics faulted (5)  
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
- **Reaction:** NONE  
- **Acknowledge:** NONE  
- **Cause:** The maximum operating time of at least one fan will soon be reached, or has already been exceeded.  
  Fault value (r0949, interpret binary):  
  Bit 0: heat sink fan will reach the maximum operating time in 500 hours.  
  Bit 1: heat sink fan has exceeded the maximum operating time.  
  Bit 8: internal device fan will reach the maximum operating time in 500 hours.  
  Bit 9: internal device fan has exceeded the maximum operating time.  
  Note:  
  The maximum operating time of the heat sink fan in the power unit is displayed in p0252.  
  The maximum operating time of the internal device fan in the power unit is internally specified and is fixed.  
- **Remedy:** For the fan involved, carry out the following:  
  - replace the fan.  
  - reset the operating hours counter (p0251, p0254).

#### F30043 Power unit: Overvolt 24/48 V

- **Message value:** Channel: %1, voltage: %2 [0.1 V]  
- **Message class:** Supply voltage fault (undervoltage) (3)  
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
- **Reaction:** OFF2  
- **Acknowledge:** POWER ON  
- **Cause:** For the power unit power supply, the upper threshold has been violated.  
  Fault value (r0949, interpret hexadecimal):  
  yyyyy hex: yy = channel, xxxx = voltage [0.1 V]  
  yy = 0: 24 V power supply  
  yy = 1: 48 V power supply  
- **Remedy:** Check the power supply of the power unit.
A30044 (F) Power unit: Overvolt 24/48 V alarm
Message value: Channel: %1, voltage: %2 [0.1 V]
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: For the power unit power supply, the upper threshold has been violated.
Alarm value (r2124, interpret hexadecimal):
yyxxxx hex: yy = channel, xxxx = voltage [0.1 V]
yy = 0: 24 V power supply
yy = 1: 48 V power supply
Remedy: Check the power supply of the power unit.
Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30045 Power unit: Supply undervoltage
Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
For S120M, the following applies:
- This message is displayed for undervoltage or overvoltage.
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
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
Fault value (r0949, interpret decimal):
Register value of the voltage fault register.
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: NONE (OFF1, OFF2)
Acknowl. upon F: IMMEDIATELY (POWER ON)

F30050 Power unit: 24 V supply overvoltage
Message value: -
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2
Acknowledge: POWER ON
Cause: The voltage monitor signals an overvoltage fault on the module.
4 Faults and alarms

4.2 List of faults and alarms

F30051  Power unit: Motor holding brake short circuit detected

- check the 24 V power supply.
- replace the module if necessary.

**F30052  EEPROM data error**

- check the connection and cable for the motor holding brake.

**F30053  FPGA data faulty**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**F30070  Cycle requested by the power unit module not supported**

- check the 24 V power supply.
- replace the module if necessary.

**Remedy:**

- check the 24 V power supply.
- replace the module if necessary.

**F30051  Power unit: Motor holding brake short circuit detected**

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF2

**Acknowledge:** IMMEDIATELY

**Cause:** A short-circuit at the motor holding brake terminals has been detected.

**Fault value (r0949, interpret decimal):**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.

**Remedy:**

- check the motor holding brake for a short-circuit.
- check the connection and cable for the motor holding brake.
4 Faults and alarms
4.2 List of faults and alarms

Remedy: The power unit only supports the following cycles:
- 62.5 µs
- 125 µs
- 250 µs
- 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).

F30071 No new actual values received from the power unit
Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

F30072 Setpoints are no longer being transferred to the power unit
Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: Communication with the power unit module is no longer in synchronism with the current control cycle.
Remedy: Wait until synchronization is re-established.

F30074 (A) Communication error between the Control Unit and Power Module
Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: IMMEDIATELY
Cause: 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:
- a Control Unit with external 24 V supply was withdrawn from the Power Module during operation.
- with the Power Module switched off, the external 24 V supply for the Control unit was interrupted for some time.
4 Faults and alarms

4.2 List of faults and alarms

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.

Remedy:
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.

Reaction upon A: NONE
Acknowl. upon A: NONE

F30080 Power unit: Current increasing too quickly

Message value: Fault cause: %1 bin
Message class: Power electronics faulted (5)
Drive object: CU_DC, CU_DC_R, CU_DC_R_S, CU_DC_S, TM150, TM15DI_DO, TM31
Reaction: IMMEDIATELY
Acknowledge: NONE

Cause:
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: 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).
### F30081 Power unit: Switching operations too frequent

**Message value:** Fault cause: `%1` bin  
**Message class:** Power electronics faulted (5)  
**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`).

### F30105 PU: Actual value sensing fault

**Message value:** -  
**Message class:** Power electronics faulted (5)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** 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.  
**Remedy:** Evaluate the diagnostic parameters.  
If the actual value channel is incorrect, check the components and if required, replace.
### N30800 (F) Power unit: Group signal

**Message value:** -  
**Message class:** Power electronics faulted (5)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** OFF2  
**Acknowledge:** NONE  
**Cause:** The power unit has detected at least one fault.  
**Remedy:** Evaluate the other messages that are presently available.  

**Reaction upon F:** OFF2  
**Acknowl. upon F:** IMMEDIATELY

### F30801 Power unit DRIVE-CLiQ: Sign-of-life missing

**Message value:** Component number: %1, fault cause: %2  
**Message class:** Internal (DRIVE-CLiQ) communication error (12)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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:** %1  
**Message class:** Hardware / software error (1)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** OFF2  
**Acknowledge:** IMMEDIATELY  
**Cause:** A time slice overflow has occurred.  
Fault value (r0949, interpret decimal):  
xx: Time slice number xx  
**Remedy:**  
- carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline.

### F30804 (N, A) Power unit: CRC

**Message value:** %1  
**Message class:** Hardware / software error (1)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** OFF2 (OFF1, OFF3)  
**Acknowledge:** IMMEDIATELY  
**Cause:** A CRC error has occurred for the power unit.  
**Remedy:**  
- carry out a POWER ON (power off/on) for all components.  
- upgrade firmware to later version.  
- contact the Hotline.
4 Faults and alarms

4.2 List of faults and alarms

F30805  Power unit: EEPROM checksum error
- Message value: %1
- Message class: Hardware / software error (1)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: OFF2
- 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.

F30809  Power unit: Switching information not valid
- Message value: -
- Message class: Hardware / software error (1)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: OFF2
- Acknowledge: IMMEDIATELY
- Cause: For 3P gating unit, the following applies:
  The last switching status word in the setpoint telegram is identified by the end ID. Such an end ID was not found.
- Remedy:
  - carry out a POWER ON (power off/on) for all components.
  - upgrade firmware to later version.
  - contact the Hotline.

A30810 (F)  Power unit: Watchdog timer
- Message value: -
- Message class: Hardware / software error (1)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: NONE
- Acknowledge: NONE
- Cause: When booting it was detected that the cause of the previous reset was an SAC watchdog timer overflow.
- Remedy:
  - carry out a POWER ON (power off/on) for all components.
  - upgrade firmware to later version.
  - contact the Hotline.

F30820  Power unit DRIVE-CLiQ: Telegram error
- Message value: Component number: %1, fault cause: %2
- Message class: Internal (DRIVE-CLiQ) communication error (12)
- Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- Reaction: OFF2
- Acknowledge: IMMEDIATELY
- Cause: A DRIVE-CLiQ communication error has occurred from the Control Unit to the power unit 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 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 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:
Carry out a POWER ON.

F30837  Power unit DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.
F30837  Power unit DRIVE-CLiQ: Component fault

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.

A30840  Power unit DRIVE-CLiQ: error below the signaling threshold

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ error has occurred below the signaling threshold.
A30840  Power unit DRIVE-CLiQ: error below the signaling threshold

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.
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
16 (= 10 hex):
The receive telegram is too early.
32 (= 20 hex):
Error in the telegram header.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
64 (= 40 hex):
Timeout in the telegram send list.
65 (= 41 hex):
Telegram type does not match send list.
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 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)

F30845  Power unit DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
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)

F30850  Power unit: Internal software error
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: 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.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: 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.

F30860 Power unit DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
### 4 Faults and alarms

#### 4.2 List of faults and alarms

**F30886**  
**PU DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data**

**Message value:** Component number: %1, fault cause: %2  
**Message class:** Internal (DRIVE-CLiQ) communication error (12)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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:**  
- 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.

**F30887**  
**Power unit DRIVE-CLiQ (CU): Component fault**

**Message value:** Component number: %1, fault cause: %2  
**Message class:** Internal (DRIVE-CLiQ) communication error (12)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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.
<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F30895</td>
<td><strong>PU DRIVE-CLiQ (CU): Alternating cyclic data transfer error</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td></td>
<td><strong>Message class:</strong> Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)</td>
</tr>
<tr>
<td></td>
<td><strong>Acknowledge:</strong> IMMEDIATELY</td>
</tr>
<tr>
<td></td>
<td><strong>Cause:</strong> A DRIVE-CLiQ communication error has occurred from the power unit to the Control Unit involved.</td>
</tr>
<tr>
<td></td>
<td>Synchronization error during alternating cyclic data transfer.</td>
</tr>
<tr>
<td></td>
<td>Note regarding the message value:</td>
</tr>
<tr>
<td></td>
<td>0000yyxx hex: yy = component number, xx = error cause</td>
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<td></td>
<td><strong>Remedy:</strong> Carry out a POWER ON.</td>
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<td></td>
<td>See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)</td>
</tr>
<tr>
<td>F30896</td>
<td><strong>Power unit DRIVE-CLiQ (CU): Inconsistent component properties</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> Component number: %1</td>
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<tr>
<td></td>
<td><strong>Message class:</strong> Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)</td>
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<tr>
<td></td>
<td><strong>Acknowledge:</strong> IMMEDIATELY</td>
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<td></td>
<td><strong>Cause:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>Component number.</td>
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<td></td>
<td><strong>Remedy:</strong></td>
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<td></td>
<td>- carry out a POWER ON.</td>
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<td>- when a component is replaced, the same component type and if possible the same firmware version should be used.</td>
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<td>- 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>
</tr>
<tr>
<td>F30899 (N, A)</td>
<td><strong>Power unit: Unknown fault</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Message value:</strong> New message: %1</td>
</tr>
<tr>
<td></td>
<td><strong>Message class:</strong> Power electronics faulted (5)</td>
</tr>
<tr>
<td></td>
<td><strong>Drive object:</strong> DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td></td>
<td><strong>Reaction:</strong> NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
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<tr>
<td></td>
<td><strong>Acknowledge:</strong> IMMEDIATELY (POWER ON)</td>
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<tr>
<td></td>
<td><strong>Cause:</strong> A fault occurred on the power unit that cannot be interpreted by the Control Unit firmware.</td>
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<tr>
<td></td>
<td>This can occur if the firmware on this component is more recent than the firmware on the Control Unit.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>Fault number.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If required, the significance of this new fault can be read about in a more recent description of the Control Unit.</td>
</tr>
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<td><strong>Remedy:</strong></td>
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<td></td>
<td>- replace the firmware on the power unit by an older firmware version (r0128).</td>
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<tr>
<td></td>
<td>- upgrade the firmware on the Control Unit (r0018).</td>
</tr>
</tbody>
</table>
4 Faults and alarms
4.2 List of faults and alarms

F30903  Power unit: I2C bus error occurred
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: 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.
Remedy:
- Upgrade firmware to later version.
- Replace the module.

F30907  Power unit: FPGA configuration unsuccessful
Message value: 
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)
Acknowledge: IMMEDIATELY
Cause: During initialization within the power unit, an internal software error has occurred.
Remedy:
- If required, upgrade the firmware in the power unit.
- Replace power unit.
- Contact the Hotline.

A30920 (F)  Power unit: Temperature sensor fault
Message value: %1
Message class: Power electronics faulted (5)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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, PT100: R > 375 Ohm).
2: Measured resistance too low (PT100: R < 20 Ohm, KTY: R < 50 Ohm, PT100: R < 30 Ohm).
Note:
A temperature sensor is connected to the following terminals:
- "Booksize" 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: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
### A30999 (F, N) Power unit: Unknown alarm

**Message value:** New message: %1  
**Message class:** Power electronics faulted (5)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** NONE  
**Acknowledge:** NONE  
**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).  
**Reaction upon F:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### F31100 (N, A) Encoder 1: Zero mark distance error

**Message value:** %1  
**Message class:** Position/speed actual value incorrect or not available (11)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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  
**Message class:** Position/speed actual value incorrect or not available (11)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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

**F31103 (N, A) Encoder 1: Amplitude error track R**

**Message value:**
R track: %1

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
ENCODER (IASC/DCBRK, NONE)

**Acknowledge:**
PULSE INHIBIT

**Cause:**
The amplitude of the reference track signal (track R) does not lie within the tolerance bandwidth for encoder 1.
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 -32768 ... 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).
See also: p0491 (Motor encoder fault response ENCODER)

**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 the encoder type (encoder with zero marks).
- 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
4 Faults and alarms

4.2 List of faults and alarms

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<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F31110 (N, A)</td>
<td>Encoder 1: Serial communications error</td>
</tr>
</tbody>
</table>

**Message value:** Fault cause: %1 bin

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, NONE)

**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.
- Bit 13: Data line incorrect.
- Bit 14: Fault for the register communication.
- Bit 15: Internal communication error.

**Remedy:**
- For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.
- 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.
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Re fault value, bit 14 = 1:
- Incorrect encoder type / replace the encoder or encoder cable.

<table>
<thead>
<tr>
<th>Re action upon N:</th>
<th>Acknowl. upon N:</th>
<th>Re action upon A:</th>
<th>Acknowl. upon A:</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

F31111 (N, A)  Encoder 1: Absolute encoder internal error

**Message value:** Fault cause: %1 bin, additional information: %2
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**Reaction:** ENCODER (IASC/DCBRK, NONE)
**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.

See also: p0491 (Motor encoder fault response ENCODER)

**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.
4 Faults and alarms

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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

F31112 (N, A)  Encoder 1: Error bit set in the serial protocol

Message value:  %1
Message class:  Position/speed actual value incorrect or not available (11)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction:  ENCODER (IASC/DCBRK, 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
Message class:  Position/speed actual value incorrect or not available (11)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction:  ENCODER (IASC/DCBRK, 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 Sensor 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.
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F31116 (N, A)</td>
<td>Encoder 1: Amplitude error monitoring track A + B</td>
<td>A track: %1, B-track: %2</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
<td>IMMEDIATELY</td>
<td>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 &lt; 130 mV (observe the frequency response of the encoder) and &gt; 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)</td>
</tr>
</tbody>
</table>

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).

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>F31117 (N, A)</td>
<td>Encoder 1: Inversion error signals A/B/R</td>
<td>Fault cause: %1 bin</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
<td>IMMEDIATELY</td>
<td>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. See also: p0491 (Motor encoder fault response ENCODER)</td>
</tr>
</tbody>
</table>

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4 Faults and alarms

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**F31118 (N, A)**  
**Encoder 1: Speed difference outside the tolerance range**

**Message value:**  
%1

**Message class:**  
Position/speed actual value incorrect or not available (11)

**Drive object:**  
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**  
ENCODER (IASC/DCBRK, 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.

**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).

**F31120 (N, A)**  
**Encoder 1: Power supply voltage fault**

**Message value:**  
Fault cause: %1 bin

**Message class:**  
Position/speed actual value incorrect or not available (11)

**Drive object:**  
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**  
ENCODER (IASC/DCBRK, 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.
- 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).
Remedy: Re fault value, bit 1 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.
Remedy: Re fault value, bit 2 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.
Remedy: Re fault value, bit 3 = 1:
- correct encoder cable connected?
- replace the encoder or encoder cable.
Remedy: Re fault value, bit 5 = 1:
- Measuring unit correctly connected at the converter?
- Replace the measuring unit or the cable to the measuring unit.
Remedy: 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: -
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: 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
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: 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.
### F31123 (N, A) Encoder 1: Signal level A/B unipolar outside tolerance

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<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
</tbody>
</table>
| 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

<table>
<thead>
<tr>
<th>Message value:</th>
<th>A track: %1, B-track: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
</tbody>
</table>
| 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 (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 for Sensor 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

<table>
<thead>
<tr>
<th>Message</th>
<th>Amplitude: %1, Angle: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause</td>
<td>The amplitude (root of $A^2 + B^2$ or $</td>
</tr>
<tr>
<td>Fault value (r0949, interpret hexadecimal):</td>
<td></td>
</tr>
<tr>
<td>yyyy = Angle</td>
<td></td>
</tr>
<tr>
<td>xxxx = Amplitude, i.e. root from $A^2 + B^2$ (16 bits without sign)</td>
<td></td>
</tr>
<tr>
<td>The nominal signal level of the encoder must lie in the range 375 mV to 600 mV (500 mV -25/+20 %).</td>
<td></td>
</tr>
<tr>
<td>The response threshold for $(</td>
<td>A</td>
</tr>
<tr>
<td>A signal level of 500 mV peak value corresponds to the numerical value of 299A hex = 10650 dec.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Note:</td>
<td>The analog values of the amplitude error are not measured at the same time with the hardware fault output by the Sensor Module.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- check that the encoder cables and shielding are routed in compliance with EMC.</td>
</tr>
<tr>
<td></td>
<td>- replace the encoder or encoder cable.</td>
</tr>
</tbody>
</table>

F31129 (N, A)  Encoder 1: Position difference hall sensor/track C/D and A/B too large

<table>
<thead>
<tr>
<th>Message</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>ENCODER (IASC/DCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause</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.</td>
</tr>
<tr>
<td>One period of track C/D corresponds to 360 ° mechanical.</td>
<td></td>
</tr>
<tr>
<td>One period of the Hall signal corresponds to 360 ° electrical.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Fault value (r0949, interpret decimal):</td>
<td>For track C/D, the following applies:</td>
</tr>
<tr>
<td></td>
<td>Measured deviation as mechanical angle (16 bits with sign, 182 dec corresponds to 1 °).</td>
</tr>
<tr>
<td></td>
<td>For Hall signals, the following applies:</td>
</tr>
<tr>
<td></td>
<td>Measured deviation as electrical angle (16 bits with sign, 182 dec corresponds to 1 °).</td>
</tr>
<tr>
<td>See also:</td>
<td>p0491 (Motor encoder fault response ENCODER)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- track C or D not connected.</td>
</tr>
<tr>
<td></td>
<td>- correct the direction of rotation of the Hall sensor possibly connected as equivalent for track C/D.</td>
</tr>
<tr>
<td></td>
<td>- check that the encoder cables are routed in compliance with EMC.</td>
</tr>
<tr>
<td></td>
<td>- check the adjustment of the Hall sensor.</td>
</tr>
</tbody>
</table>

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
4 Faults and alarms

4.2 List of faults and alarms

**F31130 (N, A)**

**Message value:**
Angular deviation, electrical: %1, angle, mechanical: %2

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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):

\[ yyyy \text{xxxx hex} \]

- 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)

**Remedy:**
- 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.

**Reaction upon N:**
NONE

**Acknowl. upon N:**
NONE

**Reaction upon A:**
NONE

**Acknowl. upon A:**
NONE

**F31131 (N, A)**

**Message value:**

\[%1\]

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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).

See also: p0491 (Motor encoder fault response ENCODER)
4 Faults and alarms

4.2 List of faults and alarms

**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

**F31135 Encoder 1: Fault when determining the position**

**Message value:** Fault cause: %1 bin

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, NONE)

**Acknowledge:** PULSE INHIBIT

**Cause:**
The encoder supplies status information bit by bit 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.

Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):
- Bit 0: F1 (safety status display).
- Bit 1: F2 (safety status display).
- Bit 2: Reserved (lighting).
- Bit 3: Reserved (signal amplitude).
- Bit 4: Reserved (position value).
- Bit 5: Reserved (overvoltage).
- Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (→ F3x110, x = 1, 2, 3).
- Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (→ F3x110, x = 1, 2, 3).
- Bit 8: Reserved (battery)/overcurrent EnDat supply (→ F3x110, x = 1, 2, 3).
- Bit 9: Reserved/overvoltage EnDat supply (→ F3x110, x = 1, 2, 3).
- Bit 11: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
- Bit 12: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
- Bit 13: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
- Bit 14: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
- Bit 15: Internal communication error (→ F3x110, x = 1, 2, 3).
- 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).
4 Faults and alarms
4.2 List of faults and alarms

Remedy:
- determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.

Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/on) is necessary to acknowledge the fault.

F31136 Encoder 1: Error when determining multiturn information

Message value:
Fault cause: %1 bin

Message class:
Position/speed actual value incorrect or not available (11)

Drive object:
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

Reaction:
ENCODER (IASC/DCBRK, NONE)

Acknowledge:
PULSE INHIBIT

Cause:
The encoder supplies status information bit by bit 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.

Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (→ F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (→ F3x110, x = 1, 2, 3).
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:
- determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.

Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.

If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON (switch-off/on) is necessary to acknowledge the fault.
4 Faults and alarms

4.2 List of faults and alarms

F31137  Encoder 1: Internal fault when determining the position
Message value: Fault cause: %1 bin
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE)
Acknowledge: PULSE INHIBIT
Cause:
A position determination fault has occurred in the DRIVE-CLiQ encoder.

Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
For yy = 08 hex (bit 27 = 1), the following bit definition applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) fault position word 1.
Bit 9: F2 (safety status display) fault position word 2.
Bit 16: LED monitoring iC-LG (opto ASIC).
Bit 17: Fault in the multiturn.
Bit 23: Temperature outside the limit values.

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F31138  Encoder 1: Internal error when determining multiturn information
Message value: Fault cause: %1 bin
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE)
Acknowledge: PULSE INHIBIT
Cause:
A position determination fault has occurred in the DRIVE-CLiQ encoder.

Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
For yy = 08 hex (bit 27 = 1), the following bit definition applies:
Bit 1: Signal monitoring (sin/cos).
Bit 8: F1 (safety status display) fault position word 1.
Bit 9: F2 (safety status display) fault position word 2.
Bit 16: LED monitoring iC-LG (opto ASIC).
Bit 17: Fault in the multiturn.
Bit 23: Temperature outside the limit values.

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

Remedy:
- determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

F31142 (N, A)  Encoder 1: Battery voltage fault
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: IMMEDIATELY
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 N: NONE
Acknowl. upon N: NONE
4 Faults and alarms

4.2 List of faults and alarms

F31150 (N, A)  Encoder 1: Initialization error
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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.

F31151 (N, A)  Encoder 1: Encoder speed for initialization AB too high
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause: The encoder speed is too high while initializing the Sensor Module.
Remedy:
Reduce the speed of the encoder accordingly during initialization.
If necessary, de-activate monitoring (p0437.29).
See also: p0437 (Sensor Module configuration extended)

F31152 (N, A)  Encoder 1: Maximum input frequency exceeded
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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 number)
Remedy:
- Reduce the speed.
- Use an encoder with a lower pulse number (p0408).
F31153 (N, A) Encoder 1: Identification error

**Message value:** %1

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** NONE

**Acknowledge:** IMMEDIATELY

**Cause:** An error has occurred when identifying the encoder (waiting) p0400=10100.

The connected encoder was not able to be identified.

Fault value (r0949, interpret hexadecimal):

- Bit 0: Data length incorrect
- See also: p0400 (Encoder type selection)

**Remedy:** Manually configure the encoder according to the data sheet.

**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

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, 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

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, 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).
4 Faults and alarms

4.2 List of faults and alarms

F31163 (N, A) Encoder 1: Analog sensor position value exceeds limit value

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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).

A31400 (F, N) Encoder 1: Alarm threshold zero mark distance error

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
4 Faults and alarms

4.2 List of faults and alarms

**A31401 (F, N)**  Encoder 1: Alarm threshold zero mark failed

**Message value:** %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

**Acknowl. upon F:** IMMEDIATELY

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**F31405 (N, A)**  Encoder 1: Temperature in the encoder evaluation inadmissible

**Message value:** %1

**Message class:** Overtemperature of the electronic components (6)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)

**Acknowledge:** IMMEDIATELY (POWER ON)

**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

**A31407 (F, N)**  Encoder 1: Function limit reached

**Message value:** %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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/DCBRK, OFF1, OFF2, OFF3, STOP2)

**Acknowl. upon F:** IMMEDIATELY
### 4 Faults and alarms

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**A31410 (F, N)**  
**Encoder 1: Serial communications**

- **Message value:** Fault cause: %1 bin
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** Serial communication protocol transfer error between the encoder and evaluation module.
  - Alarm value (#2124, 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:** NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The absolute encoder fault word includes alarm bits that have been set.
  - Alarm value (#2124, 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 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.
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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:** NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
**Acknowl. upon F:** IMMEDIATELY

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
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N31415 (F, A) Encoder 1: Amplitude alarm track A or B (A^2 + B^2)

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Amplitude: %1, Angle: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</td>
<td>The amplitude (root of A^2 + B^2) for encoder 1 exceeds the permissible tolerance.</td>
</tr>
</tbody>
</table>

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 Sensor 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.

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: NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon A: NONE

Acknowl. upon A: NONE

A31418 (F, N) Encoder 1: Speed difference per sampling rate exceeded

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</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.</td>
</tr>
</tbody>
</table>

Alarm value (r2124, interpret decimal):

Only for internal Siemens troubleshooting.

See also: p0492 (Square-wave encoder maximum speed difference per sampling cycle)

**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/DCBRK, OFF1, OFF2, OFF3, STOP2)

Acknowl. upon F: IMMEDIATELY

Reaction upon N: NONE

Acknowl. upon N: NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>A31419 (F, N)</th>
<th>Encoder 1: Track A or B outside tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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.</td>
</tr>
<tr>
<td></td>
<td>Amplitude error correction: Amplitude B / Amplitude A = 0.78 ... 1.27</td>
</tr>
<tr>
<td></td>
<td>Phase: &lt;84 degrees or &gt;96 degrees</td>
</tr>
<tr>
<td></td>
<td>SMC20: Offset correction: +/-140 mV</td>
</tr>
<tr>
<td></td>
<td>SMC10: Offset correction: +/-650 mV</td>
</tr>
<tr>
<td></td>
<td>Alarm value (r2124, interpret hexadecimal):</td>
</tr>
<tr>
<td></td>
<td>xxxx1: Minimum of the offset correction, track B</td>
</tr>
<tr>
<td></td>
<td>xxxx2: Maximum of the offset correction, track B</td>
</tr>
<tr>
<td></td>
<td>xxx1x: Minimum of the offset correction, track A</td>
</tr>
<tr>
<td></td>
<td>xxx2x: Maximum of the offset correction, track A</td>
</tr>
<tr>
<td></td>
<td>xx1xx: Minimum of the amplitude correction, track B/A</td>
</tr>
<tr>
<td></td>
<td>xx2xx: Maximum of the amplitude correction, track B/A</td>
</tr>
<tr>
<td></td>
<td>x1xxx: Minimum of the phase error correction</td>
</tr>
<tr>
<td></td>
<td>x2xxx: Maximum of the phase error correction</td>
</tr>
<tr>
<td></td>
<td>1xxxx: Minimum of the cubic correction</td>
</tr>
<tr>
<td></td>
<td>2xxxx: Maximum of the cubic correction</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>See also: p0491 (Motor encoder fault response ENCODER)</td>
</tr>
<tr>
<td></td>
<td>- check mechanical mounting tolerances for encoders without their own bearings (e.g. toothed-wheel encoders).</td>
</tr>
<tr>
<td></td>
<td>- check the plug connections (also the transition resistance).</td>
</tr>
<tr>
<td></td>
<td>- check the encoder signals.</td>
</tr>
<tr>
<td></td>
<td>- replace the encoder or encoder cable.</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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>A31421 (F, N)</th>
<th>Encoder 1: Coarse position error</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>%1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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>
<tr>
<td></td>
<td>Alarm value (r2124, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>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.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>Re alarm value = 3:</td>
</tr>
<tr>
<td></td>
<td>- For a standard encoder with cable, contact the manufacturer where relevant.</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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>
### A31422 (F, N) Encoder 1: Pulses per revolution square-wave encoder outside tolerance bandwidth

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</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>
</tr>
<tr>
<td>Remedy:</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>Reaction upon F:</td>
<td>NONE (ENCODER, IASC/DCCB, OFF1, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### A31429 (F, N) Encoder 1: Position difference hall sensor/track C/D and A/B too large

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause:</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>
</tr>
<tr>
<td>Remedy:</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>Reaction upon F:</td>
<td>NONE (ENCODER, IASC/DCCB, OFF1, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
<th>Reaction upon F</th>
<th>Acknowl. upon F</th>
<th>Reaction upon N</th>
<th>Acknowl. upon N</th>
</tr>
</thead>
</table>
| A31431 (F, N) | Encoder 1: Deviation position incremental/absolute too large | %1            | Position/speed actual value incorrect or not available (11)     | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S        | NONE                     | IMMEDIATELY | 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):

Deviations in quadrants (1 pulse = 4 quadrants).

See also: p0491 (Motor encoder fault response ENCODER)  

Remedy: \n
- 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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)  

Acknowl. upon F: IMMEDIATELY  

Reaction upon N: NONE  

Acknowl. upon N: NONE  

| A31432 (F, N) | Encoder 1: Rotor position adaptation corrects deviation | %1            | Position/speed actual value incorrect or not available (11)     | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S        | NONE                     | IMMEDIATELY | 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: \n
- 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/DCBRK, OFF1, OFF2, OFF3, STOP2)  

Acknowl. upon F: IMMEDIATELY  

Reaction upon N: NONE  

Acknowl. upon N: NONE  

| A31442 (F, N) | Encoder 1: Battery voltage pre-alarm | -             | Position/speed actual value incorrect or not available (11)     | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S        | NONE                     | IMMEDIATELY | When switched-off, the encoder uses a battery to back up the multturn information. The multturn information can no longer be buffered if the battery voltage drops even further.  

Remedy: Replace battery.
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A31443 (F, N)</td>
<td>Encoder 1: Unipolar CD signal level outside specification</td>
</tr>
<tr>
<td>A31460 (N)</td>
<td>Encoder 1: Analog sensor channel A failed</td>
</tr>
</tbody>
</table>

**A31443 (F, N) Encoder 1: Unipolar CD signal level outside specification**

- **Message value:** Fault cause: %1 bin
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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).

**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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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:**
- check the output voltage of the analog sensor.
- check the voltage setting for each encoder period (p4673).
- check the range limit setting and increase it if necessary (p4676).

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
4 Faults and alarms

4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Class</th>
<th>Drive Object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| A31461 (N) | Encoder 1: Analog sensor channel B failed | Position/speed actual value incorrect or not available (11) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | NONE | NONE | The input voltage of the analog sensor is outside the permissible limits. | 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). |
| A31462 (N) | Encoder 1: Analog sensor no channel active | Error in the parameterization / configuration / commissioning procedure (18) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | NONE | NONE | Channel A and B are not activated for the analog sensor. | - activate channel A and/or channel B (p4670).  
- check the encoder configuration (p0404.17). |
| A31463 (N) | Encoder 1: Analog sensor position value exceeds limit value | Position/speed actual value incorrect or not available (11) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | NONE | NONE | The position value has exceeded the permissible range of -0.5 ... +0.5. | 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). |
### A31470 (F, N)  Encoder 1: Soiling detected

**Message value:** -
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, 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:** -
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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

### F31501 (N, A)  Encoder 1: Position tracking encoder position outside tolerance window

**Message value:** %1
**Message class:** Position/speed actual value incorrect or not available (11)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**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)
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Remedy:</th>
<th>Reset the position tracking as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- select encoder commissioning (p0010 = 4).</td>
</tr>
<tr>
<td></td>
<td>- reset the position tracking as follows (p0411.2 = 1).</td>
</tr>
<tr>
<td></td>
<td>- de-select encoder commissioning (p0010 = 0).</td>
</tr>
<tr>
<td></td>
<td>The fault should then be acknowledged and, if necessary, the absolute encoder adjusted (p2507).</td>
</tr>
<tr>
<td></td>
<td>See also: p0010</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>

**F31502 (N, A) Encoder 1: Encoder with measuring gear without valid signals**
- **Message value:** -
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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

**F31503 (N, A) Encoder 1: Position tracking cannot be reset**
- **Message value:** -
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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

**A31700 Encoder 1: Effectivity test does not supply the expected value**
- **Message value:** Fault cause: %1 bin
- **Message class:** Safety monitoring channel has identified an error (10)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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.
4 Faults and alarms

4.2 List of faults and alarms

N31800 (F)  Encoder 1: Group signal
Message value: -
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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.
Reaction upon F: ENCODER (IASC/DCBRK, NONE)
Acknowl. upon F: IMMEDIATELY

F31801 (N, A)  Encoder 1 DRIVE-CLiQ: Sign-of-life missing
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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).
See also: p0491 (Motor encoder fault response ENCODER)
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.
4 Faults and alarms

4.2 List of faults and alarms

**F31804 (N, A) Encoder 1: Checksum error**

**Message value:** %1

**Message class:** Hardware / software error (1)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, 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):

```
yyyyMMdd 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 (\( \geq V2.6\) HF3, \( \geq V4.3\) SP2, \( \geq V4.4\)),
- check whether the permissible ambient temperature for the component is maintained.
- replace the Sensor Module.

**F31805 (N, A) Encoder 1: EEPROM checksum error**

**Message value:** %1

**Message class:** Hardware / software error (1)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, 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.

**F31806 (N, A) Encoder 1: Initialization error**

**Message value:** %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, 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.
```
4 Faults and alarms

4.2 List of faults and alarms

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 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*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.

A31811 (F, N) Encoder 1: Encoder serial number changed

Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 List of faults and alarms

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.

F31812 (N, A) Encoder 1: Requested cycle or RX-/TX timing not supported
Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCBRK, 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 Control Unit to the encoder concerned. Fault cause:</td>
</tr>
<tr>
<td></td>
<td>1 (= 01 hex):Checksum error (CRC error).</td>
</tr>
<tr>
<td></td>
<td>2 (= 02 hex):Telegram is shorter than specified in the length byte or in the receive list.</td>
</tr>
<tr>
<td></td>
<td>3 (= 03 hex):Telegram is longer than specified in the length byte or in the receive list.</td>
</tr>
<tr>
<td></td>
<td>4 (= 04 hex):The length of the receive telegram does not match the receive list.</td>
</tr>
<tr>
<td></td>
<td>5 (= 05 hex):The type of the receive telegram does not match the receive list.</td>
</tr>
<tr>
<td></td>
<td>6 (= 06 hex):The address of the component in the telegram and in the receive list do not match.</td>
</tr>
<tr>
<td></td>
<td>7 (= 07 hex):A SYNC telegram is expected - but the received telegram is not a SYNC telegram.</td>
</tr>
<tr>
<td></td>
<td>8 (= 08 hex):No SYNC telegram is expected - but the received telegram is one.</td>
</tr>
<tr>
<td></td>
<td>9 (= 09 hex):The error bit in the receive telegram is set.</td>
</tr>
<tr>
<td></td>
<td>16 (= 10 hex):The receive telegram is too early.</td>
</tr>
</tbody>
</table>

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 (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)

### F31835 (N, A) Encoder 1 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>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCBRK, 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 Control Unit to the encoder concerned. The nodes do not send and receive in synchronism. Fault cause:</td>
</tr>
<tr>
<td></td>
<td>33 (= 21 hex):The cyclic telegram has not been received.</td>
</tr>
<tr>
<td></td>
<td>34 (= 22 hex):Timeout in the telegram receive list.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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

F31837 (N, A) Encoder 1 DRIVE-CLiQ: Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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)
4 Faults and alarms

4.2 List of faults and alarms

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

A31840 Encoder 1 DRIVE-CLiQ: error below the signaling threshold

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause:
A DRIVE-CLiQ error has occurred below the signaling threshold.
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.
10 (= 0A hex): The sign-of-life bit in the receive telegram is not set.
11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
16 (= 10 hex): The receive telegram is too early.
32 (= 20 hex): Error in the telegram header.
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.
65 (= 41 hex): Telegram type does not match send list.
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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):
000yyxxx hex: yy = component number, xx = error cause

Remedy:
- 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)

F31845 (N, A) Encoder 1 DRIVE-CLiQ: Cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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 (power off/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

F31850 (N, A) Encoder 1: Encoder evaluation internal software error

Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE)
Acknowledge: POWER ON
Cause: 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 ... 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.
See also: p0491 (Motor encoder fault response ENCODER)

Remedy:
- replace the Sensor Module.
- if required, upgrade the firmware in the Sensor Module.
- contact the Hotline.
4 Faults and alarms

4.2 List of faults and alarms

---

**F31851 (N, A) Encoder 1 DRIVE-CLiQ (CU): Sign-of-life missing**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

**Cause:**
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.
- 16 (= 10 hex):
  The error bit in the receive telegram is set.
- 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.

---

**F31860 (N, A) Encoder 1 DRIVE-CLiQ (CU): Telegram error**

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>ENCODER (IASC/DCCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

**Cause:**
A DRIVE-CLiQ communication error has occurred from the Sensor Module (encoder 1) 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.
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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

F31875 (N, A) Encoder 1 DRIVE-CLiQ (CU): Supply voltage failed
Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31885 (N, A) Encoder 1 DRIVE-CLiQ (CU): Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE)
Acknowledge: IMMEDIATELY
Cause: 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.
4 Faults and alarms

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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

F31886 (N, A) Encoder 1 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, NONE)
Acknowledge: IMMEDIATELY
Cause: 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
Remedy:
- carry out a POWER ON.
- check whether the firmware version of the encoder (r0148) matches the firmware version of Control Unit (r0018).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F31887 (N, A) Encoder 1 DRIVE-CLiQ (CU): Component fault

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
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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.

F31895 (N, A) Encoder 1 DRIVE-CLiQ (CU): Alternating cyclic data transfer error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (IASC/DCBRK, 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)

F31896 (N, A) Encoder 1 DRIVE-CLiQ (CU): Inconsistent component properties

Message value: Component number: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF2 (ENCODER, IASC/DCBRK, NONE, OFF1, OFF3, 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).
### F31899 (N, A) Encoder 1: Unknown fault

**Message value:** New message: %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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.

**Remedy:**

- replace the firmware on the Sensor Module by an older firmware version (r0148).
- upgrade the firmware on the Control Unit (r0018).

### A31902 (F, N) Encoder 1: SPI-BUS error occurred

**Message value:** %1

**Message class:** Hardware / software error (1)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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.

### A31903 (F, N) Encoder 1: I2C-BUS error occurred

**Message value:** %1

**Message class:** Hardware / software error (1)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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.
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F31905 (N, A) Encoder 1: Parameterization error

Message value:
Parameter: %1, supplementary information: %2

Message class:
Error in the parameterization / configuration / commissioning procedure (18)

Drive object:
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

Reaction:
ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, 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):

yyyyxxxx dec: 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.
  yyyy = 11:
  The hardware does not support track monitoring.
  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
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<tr>
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<th>Description</th>
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<td>F31912</td>
<td>Encoder 1: Device combination is not permissible</td>
</tr>
<tr>
<td>A31915 (F, N)</td>
<td>Encoder 1: Configuration error</td>
</tr>
</tbody>
</table>

**F31912 Encoder 1: Device combination is not permissible**

- **Message value:** %1
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** ENCODER (IASC/DCBRK, 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
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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:** NONE (ENCODER, IASC/DCBRK)
  **Acknowl. upon F:** IMMEDIATELY
  **Reaction upon N:** NONE
  **Acknowl. upon N:** NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
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<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
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<th>Remedy</th>
<th>Reaction upon N</th>
<th>Acknowledge upon N</th>
<th>Reaction upon A</th>
<th>Acknowledge upon A</th>
</tr>
</thead>
<tbody>
<tr>
<td>F31916 (N, A)</td>
<td>Encoder 1: Parameterization fault</td>
<td>Parameter: %1, supplementary information: %2</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>ENCODER (IASC/DCBRK, NONE, OFF1, OFF2, OFF3, STOP2)</td>
<td>IMMEDIATELY</td>
<td>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. See also: p0491 (Motor encoder fault response ENCODER)</td>
<td>- check whether the connected encoder type matches the encoder that has been parameterized. - correct the parameter specified by the fault value (r0949) and p0187.</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td></td>
</tr>
<tr>
<td>A31920 (F, N)</td>
<td>Encoder 1: Temperature sensor fault</td>
<td>Fault cause: %1, channel number: %2</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
<td>NONE</td>
<td>When evaluating the temperature sensor, an error occurred. Fault cause: 1 (= 01 hex): Wire breakage or sensor not connected (KTY: R &gt; 1630 Ohm). 2 (= 02 hex): Measured resistance too low (PTC: R &lt; 20 Ohm, KTY: R &lt; 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 See also: p0491 (Motor encoder fault response ENCODER)</td>
<td>- check that the encoder cable is the correct type and is correctly connected. - check the temperature sensor selection in p0600 to p0603.</td>
<td>NONE (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
<td>IMMEDIATELY</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

A31930 (N)  Encoder 1: Data logger has saved data
Message value: -
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

A31940 (F, N)  Encoder 1: Spindle sensor S1 voltage incorrect
Message value: %1
Message class: Application / technological function faulted (17)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 (ENCODER, IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F31950  Encoder 1: Internal software error
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: ENCODER (OFF2)
Acknowledge: POWER ON
Cause: An internal software error has occurred.
Fault value (r0949, interpret decimal):
The fault value contains information regarding the fault source.
Only for internal Siemens troubleshooting.
## 4 Faults and alarms

### 4.2 List of faults and alarms

**Remedy:**
- If necessary, upgrade the firmware in the Sensor Module to a later version.
- contact the Hotline.

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message Value</th>
<th>Message Class</th>
<th>Drive Object</th>
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</thead>
<tbody>
<tr>
<td>A31999 (F, N)</td>
<td><strong>Encoder 1: Unknown alarm</strong></td>
<td>New message: %1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
<td>NONE</td>
<td>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 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. See also: p0491 (Motor encoder fault response ENCODER)</td>
</tr>
<tr>
<td>F32100 (N, A)</td>
<td><strong>Encoder 2: Zero mark distance error</strong></td>
<td>%1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
<td>PULSE INHIBIT</td>
<td>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.</td>
</tr>
<tr>
<td>F32101 (N, A)</td>
<td><strong>Encoder 2: Zero mark failed</strong></td>
<td>%1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
<td>PULSE INHIBIT</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).</td>
</tr>
</tbody>
</table>

**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

**Remedy:**
- If necessary, upgrade the firmware in the Sensor Module to a later version.
- contact the Hotline.
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.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F32103 (N, A) Encoder 2: Amplitude error track R
Message value: R track: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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 -32768 ... 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 the encoder type (encoder with zero marks).
- 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

F32110 (N, A) Encoder 2: Serial communications error
Message value: Fault cause: %1 bin
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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.
Bit 13: Data line incorrect.
Bit 14: Fault for the register communication.
Bit 15: Internal communication error.

Note:
For an EnDat 2.2 encoder, the significance of the fault value for F3x135 (x = 1, 2, 3) is described.

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
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>F32111 (N, A)</th>
<th>Encoder 2: Absolute encoder internal fault</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Message value:</strong></td>
<td>Fault cause: %1 bin, additional information: %2</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>PULSE INHIBIT</td>
</tr>
</tbody>
</table>
| **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 |
### F32112 (N, A) Encoder 2: Error bit set in the serial protocol

**Message value:**

%1

**Message class:**

Position/speed actual value incorrect or not available (11)

**Drive object:**

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**

OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

**Acknowledge:**

PULSE INHIBIT

**Cause:**

The encoder sends a set error bit via the serial protocol.

Fault value (r0849, 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

---

### F32115 (N, A) Encoder 2: Amplitude error track A or B (A^2 + B^2)

**Message value:**

A track: %1, B-track: %2

**Message class:**

Position/speed actual value incorrect or not available (11)

**Drive object:**

DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**

OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

**Acknowledge:**

PULSE INHIBIT

**Cause:**

The amplitude (root of A^2 + B^2) for encoder 2 exceeds the permissible tolerance.

Fault value (r0849, 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 Sensor 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.

**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

**Acknowl. upon N:**

NONE

**Reaction upon A:**

NONE

**Acknowl. upon A:**

NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<th>F32116 (N, A)</th>
<th>Encoder 2: Amplitude error monitoring track A + B</th>
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<td><strong>Message value:</strong></td>
<td>A track: %1, B-track: %2</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>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. Failure 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 &lt; 130 mV (observe the frequency response of the encoder) and &gt; 955 mV. 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 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).</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>
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<table>
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<tr>
<th>F32117 (N, A)</th>
<th>Encoder 2: Inversion error signals A/B/R</th>
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<td><strong>Message value:</strong></td>
<td>Fault cause: %1 bin</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
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</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>For a square-wave encoder (bipolar, double ended) signals A*, B* and R* are not inverted with respect to signals A, B and R. Failure 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.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check the encoder/cable. - check the plug connections. - replace the encoder or encoder cable. - check the Sensor Module (e.g. contacts).</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>
## 4 Faults and alarms

### 4.2 List of faults and alarms

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<th>Error Code</th>
<th>Description</th>
<th>Message Value</th>
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<th>Reaction</th>
<th>Acknowledgment</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F32118 (N, A)</td>
<td>Encoder 2: Speed difference outside the tolerance range</td>
<td>%1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
<td>PULSE INHIBIT</td>
<td>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 (Square-wave encoder maximum speed difference per sampling cycle)</td>
<td>- 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).</td>
</tr>
</tbody>
</table>

|Reaction upon A: NONE | Acknowl. upon A: NONE |

|F32120 (N, A) | Encoder 2: Power supply voltage fault | Fault cause: %1 bin | Position/speed actual value incorrect or not available (11) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S | OFF1 (IASC/DCBRK, NONE, OFF2, OFF3) | PULSE INHIBIT | 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. 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. | |

|Reaction upon N: NONE | Acknowl. upon N: NONE | Reaction upon A: NONE | Acknowl. upon A: NONE |

|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. | | |
4 Faults and alarms

4.2 List of faults and alarms

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

**F32121 (N, A) Encoder 2: Coarse position error**

Message value: -
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

**F32122 Encoder 2: Internal power supply voltage faulty**

Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1
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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY
Cause: 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).
4 Faults and alarms

4.2 List of faults and alarms

**F32125 (N, A) Encoder 2: Amplitude error track A or B overcontrolled**

**Message value:**
A track: %1, B-track: %2

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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 for Sensor 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.

**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

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

**Acknowledge:**
PULSE INHIBIT

**Cause:**
The amplitude (root of A^2 + B^2 or |A| + |B|) for encoder 2 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.
4 Faults and alarms

4.2 List of faults and alarms

F32129 (N, A) Encoder 2: Position difference hall sensor/track C/D and A/B too large

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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 °
F32131 (N, A) Encoder 2: Deviation position incremental/absolute too large

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
Acknowledge: PULSE INHIBIT
Cause:

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).

F32135 Encoder 2: Fault when determining the position

Message value: Fault cause: %1 bin
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause:
The encoder supplies status information bit by bit 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.

Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.
4 Faults and alarms

4.2 List of faults and alarms

Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (→ F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (→ F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (→ F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (→ F3x110, x = 1, 2, 3).
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:
- determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.

Note:
An EnDat 2.2 encoder may only be removed and inserted in the “Park” state.
If an EnDat 2.2 encoder was removed when not in the “Park” state, then after inserting the encoder, a POWER ON (switch-off/on) is necessary to acknowledge the fault.

F32136 Encoder 2: Error when determining multiturn information

<table>
<thead>
<tr>
<th>Message value:</th>
<th>Fault cause: %1 bin</th>
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<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td>Cause:</td>
<td>The encoder supplies status information bit by bit 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.</td>
</tr>
</tbody>
</table>

Note regarding the bit designation:
The first designation is valid for DRIVE-CLiQ encoders, the second for EnDat 2.2 encoders.

Fault value (r0949, interpret binary):
Bit 0: F1 (safety status display).
Bit 1: F2 (safety status display).
Bit 2: Reserved (lighting).
Bit 3: Reserved (signal amplitude).
4 Faults and alarms

4.2 List of faults and alarms

Bit 4: Reserved (position value).
Bit 5: Reserved (overvoltage).
Bit 6: Reserved (undervoltage)/hardware fault EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 7: Reserved (overcurrent)/EnDat encoder withdrawn when not in the parked state (--> F3x110, x = 1, 2, 3).
Bit 8: Reserved (battery)/overcurrent EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 9: Reserved/overvoltage EnDat supply (--> F3x110, x = 1, 2, 3).
Bit 11: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 12: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 13: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 14: Reserved/internal communication error (--> F3x110, x = 1, 2, 3).
Bit 15: Internal communication error (--> F3x110, x = 1, 2, 3).
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:
- determine the detailed cause of the fault using the fault value.
- replace the encoder if necessary.

Note:
An EnDat 2.2 encoder may only be removed and inserted in the "Park" state.
If an EnDat 2.2 encoder was removed when not in the "Park" state, then after inserting the encoder, a POWER ON
(switch-off/on) is necessary to acknowledge the fault.

F32137 Encoder 2: Internal fault when determining the position

Message value: Fault cause: %1 bin
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
Acknowledge: PULSE INHIBIT
Cause:
A position determination fault has occurred in the DRIVE-CLiQ encoder.
Fault value (r0949, interpret binary):
yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause
For yy = 08 hex (bit 27 = 1), the following bit definition applies:
Bit 1: Signal monitoring (sin/cos),
Bit 8: F1 (safety status display) fault position word 1.
Bit 9: F2 (safety status display) fault position word 2.
Bit 16: LED monitoring iC-LG (opto ASIC).
Bit 17: Fault in the multiturn.
Bit 23: Temperature outside the limit values.
Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed
information on the bit coding.
Remedy:
- determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.
### F32138 Encoder 2: Internal error when determining multiturn information

**Message value:**  
Fault cause: %1 bin

**Message class:**  
Hardware / software error (1)

**Drive object:**  
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**  
OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)

**Acknowledge:**  
PULSE INHIBIT

**Cause:**  
A position determination fault has occurred in the DRIVE-CLiQ encoder.

Fault value (r0949, interpret binary):

yyxxxxxx hex: yy = encoder version, xxxxxx = bit coding of the fault cause

For yy = 08 hex (bit 27 = 1), the following bit definition applies:

- Bit 1: Signal monitoring (sin/cos).
- Bit 8: F1 (safety status display) fault position word 1.
- Bit 9: F2 (safety status display) fault position word 2.
- Bit 16: LED monitoring iC-LG (opto ASIC).
- Bit 17: Fault in the multiturn.
- Bit 23: Temperature outside the limit values.

Note:
For an encoder version that is not described here, please contact the encoder manufacturer for more detailed information on the bit coding.

**Remedy:**

- determine the detailed cause of the fault using the fault value.
- if required, replace the DRIVE-CLiQ encoder.

### F32142 (N, A) Encoder 2: Battery voltage fault

**Message value:**  
-

**Message class:**  
Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:**  
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**  
OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

**Acknowledge:**  
IMMEDIATELY

**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 N:**  
NONE

**Acknowl. upon N:**  
NONE

**Reaction upon A:**  
NONE

**Acknowl. upon A:**  
NONE

### F32150 (N, A) Encoder 2: Initialization error

**Message value:**  
%1

**Message class:**  
Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:**  
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**  
OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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
### 4.2 List of faults and alarms

#### F32151 (N, A) Encoder 2: Encoder speed for initialization AB too high
- **Message value**: %1
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction**: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)
- **Acknowledge**: PULSE INHIBIT
- **Cause**: The encoder speed is too high while initializing the Sensor Module.
- **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

#### F32152 (N, A) Encoder 2: Maximum input frequency exceeded
- **Message value**: %1
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction**: OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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 number)
- **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

#### F32153 (N, A) Encoder 2: Identification error
- **Message value**: %1
- **Message class**: Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object**: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction**: NONE
- **Acknowledge**: IMMEDIATELY
- **Cause**: An error has occurred when identifying the encoder (waiting) p0400=10100.
  - The connected encoder was not able to be identified.
  - **Fault value (r0949, interpret hexadecimal)**:  
    - Bit 0: Data length incorrect
  - See also: p0400 (Encoder type selection)
- **Remedy**:  
  - Manually configure the encoder according to the data sheet.
- **Reaction upon N**: NONE
- **Acknowl. upon N**: NONE
- **Reaction upon A**: NONE
- **Acknowl. upon A**: NONE
4 Faults and alarms

4.2 List of faults and alarms

---

**F32160 (N, A) Encoder 2: Analog sensor channel A failed**

**Message value:** %1

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, 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:**
- check the output voltage of the analog sensor.
- check the voltage setting for each encoder period (p4673).
- 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

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, 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:**
- check the output voltage of the analog sensor.
- check the voltage setting for each encoder period (p4675).
- 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

**Message class:** Position/speed actual value incorrect or not available (11)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, 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.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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/DCBRK, OFF1, OFF2, OFF3, 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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<tr>
<th>Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
</tr>
</thead>
<tbody>
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<td>F32405 (N, A)</td>
<td>Encoder 2: Temperature in the encoder evaluation inadmissible</td>
<td>%1</td>
<td>Overtemperature of the electronic components (6)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td></td>
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<td>Drive object:</td>
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<td></td>
<td>Reaction upon N:</td>
<td></td>
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<td></td>
<td>Acknowl. upon N:</td>
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<td></td>
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<td></td>
<td>Reaction upon A:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Acknowl. upon A:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A32407 (F, N)</td>
<td>Encoder 2: Function limit reached</td>
<td>%1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drive object:</td>
<td></td>
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<td></td>
<td>Reaction:</td>
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<td>Acknowledge:</td>
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<td>Cause:</td>
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<td>Remedy:</td>
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<td>Reaction upon F:</td>
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<td>Acknowl. upon F:</td>
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<td>Reaction upon N:</td>
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<td></td>
<td>Acknowl. upon N:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A32410 (F, N)</td>
<td>Encoder 2: Serial communications</td>
<td>Fault cause: %1 bin</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Drive object:</td>
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<td>Reaction:</td>
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<td>Remedy:</td>
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<td></td>
<td>Reaction upon F:</td>
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<td></td>
<td>Acknowl. upon F:</td>
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<td>Reaction upon N:</td>
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<td></td>
<td></td>
<td>Acknowl. upon N:</td>
<td></td>
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</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

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: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, 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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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/DCBRK, OFF1, OFF2, OFF3, 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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
4 Faults and alarms

4.2 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

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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):
- yyyyyxxxx hex:
  - yyyyy = 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.
- 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.

**Remedy:**
- check the Hall signals.

**N32415 (F, A) Encoder 2: Amplitude alarm track A or B (A^2 + B^2)**

**Message value:**
- Amplitude: %1, Angle: %2

**Message class:**
Position/speed actual value incorrect or not available (11)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**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):
- yyyyyxxx hex:
  - yyyyy = 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 Sensor 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.
4 Faults and alarms

4.2 List of faults and alarms

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/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon A: NONE
Acknowl. upon A: NONE

A32418 (F, N) Encoder 2: Speed difference per sampling rate exceeded
Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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 (Square-wave encoder maximum speed difference per sampling cycle)
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/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32419 (F, N) Encoder 2: Track A or B outside tolerance
Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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
- 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
## 4 Faults and alarms

### 4.2 List of faults and alarms

**A32421 (F, N) Encoder 2: Coarse position error**

**Message value:** %1  
**Message class:** Position/speed actual value incorrect or not available (11)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, 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  
**Message class:** Position/speed actual value incorrect or not available (11)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**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/DCBRK, OFF1, OFF2, OFF3, 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

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</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 °).</td>
</tr>
<tr>
<td>Remedy</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>Reaction upon F</td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>

### A32431 (F, N) Encoder 2: Deviation position incremental/absolute too large

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>NONE</td>
</tr>
<tr>
<td>Cause</td>
<td>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).</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. - Clean coding disk or remove strong magnetic fields.</td>
</tr>
<tr>
<td>Reaction upon F</td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td>Acknowl. upon F</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Reaction upon N</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowl. upon N</td>
<td>NONE</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 List of faults and alarms

A32432 (F, N) Encoder 2: Rotor position adaptation corrects deviation

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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):
The 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 (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A32442 (F, N) Encoder 2: Battery voltage pre-alarm

Message value: 
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.

Remedy: Replace battery.

Reaction upon F: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, 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
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.
Faults and alarms

4.2 List of faults and alarms

A32460 (N) Encoder 2: Analog sensor channel A failed

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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).

A32461 (N) Encoder 2: Analog sensor channel B failed

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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).

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).

A32462 (N) Encoder 2: Analog sensor no channel active

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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).
4 Faults and alarms

4.2 List of faults and alarms

A32463 (N) Encoder 2: Analog sensor position value exceeds limit value

Message value: %1
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE

Cause: The position value has exceeded the permissible range of -0.5 ... +0.5.

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).

A32470 (F, N) Encoder 2: Soiling detected

Message value: -
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

F32500 (N, A) Encoder 2: Position tracking traversing range exceeded

Message value: -
Message class: Position/speed actual value incorrect or not available (11)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
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.

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.
4 Faults and alarms
4.2 List of faults and alarms

**F32501 (N, A)**  Encoder 2: Position tracking encoder position outside tolerance window

| Message value: | %1 |
| Message class: | Position/speed actual value incorrect or not available (11) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| 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

**F32502 (N, A)**  Encoder 2: Encoder with measuring gear without valid signals

| Message value: | - |
| Message class: | Position/speed actual value incorrect or not available (11) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| 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.

**F32503 (N, A)**  Encoder 2: Position tracking cannot be reset

| Message value: | - |
| Message class: | Position/speed actual value incorrect or not available (11) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| 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.
4 Faults and alarms

4.2 List of faults and alarms

A32700   Encoder 2: Effectivity test does not supply the expected value

- **Message value:** Fault cause: %1 bin
- **Message class:** Safety monitoring channel has identified an error (10)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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.

N32800 (F)   Encoder 2: Group signal

- **Message value:** -
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
- **Acknowledge:** NONE
- **Cause:** The motor encoder has detected at least one fault.
- **Remedy:** Evaluates other actual messages.
- **Reaction upon F:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY

F32801 (N, A)   Encoder 2 DRIVE-CLiQ: Sign-of-life missing

- **Message value:** Component number: %1, fault cause: %2
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (IASC/DCBRK, 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):
          - 0000yyxx 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

F32802 (N, A)   Encoder 2: Time slice overflow

- **Message value:** %1
- **Message class:** Hardware / software error (1)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)
- **Acknowledge:** IMMEDIATELY
- **Cause:** A time slice overflow has occurred in encoder 2.
4 Faults and alarms

4.2 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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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: EEPROM checksum error
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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
### F32806 (N, A) Encoder 2: Initialization error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRK, 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.</td>
</tr>
</tbody>
</table>

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 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*A0
- Bits 2 ... 20: 6SL3055-0AA00-5*A1 and higher

**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

Acknowledgment upon N: NONE

Reaction upon A: NONE

Acknowledgment upon A: NONE
### A32811 (F, N) Encoder 2: Encoder serial number changed

| Message value: | - |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| Reaction: | NONE |
| Acknowledge: | NONE |
| 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 F: | NONE (OFF1, OFF2, OFF3) |
| Acknowl. upon F: | IMMEDIATELY |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |

### F32812 (N, A) Encoder 2: Requested cycle or RX-/TX timing not supported

| Message value: | %1 |
| Message class: | Error in the parameterization / configuration / commissioning procedure (18) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| 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 |
| Message class: | Hardware / software error (1) |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S |
| Reaction: | OFF1 (IASC/DCBRK, 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. |
4 Faults and alarms

4.2 List of faults and alarms

**F32820 (N, A) Encoder 2 DRIVE-CLiQ: Telegram error**

<table>
<thead>
<tr>
<th>Message value</th>
<th>Component number: %1, fault cause: %2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF1 (IASC/DCBRK, 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 concerned. Fault cause:</td>
</tr>
<tr>
<td></td>
<td>1 (= 01 hex): Checksum error (CRC error).</td>
</tr>
<tr>
<td></td>
<td>2 (= 02 hex): Telegram is shorter than specified in the length byte or in the receive list.</td>
</tr>
<tr>
<td></td>
<td>3 (= 03 hex): Telegram is longer than specified in the length byte or in the receive list.</td>
</tr>
<tr>
<td></td>
<td>4 (= 04 hex): The length of the receive telegram does not match the receive list.</td>
</tr>
<tr>
<td></td>
<td>5 (= 05 hex): The type of the receive telegram does not match the receive list.</td>
</tr>
<tr>
<td></td>
<td>6 (= 06 hex): The address of the component in the telegram and in the receive list do not match.</td>
</tr>
<tr>
<td></td>
<td>7 (= 07 hex): A SYNC telegram is expected - but the received telegram is not a SYNC telegram.</td>
</tr>
<tr>
<td></td>
<td>8 (= 08 hex): No SYNC telegram is expected - but the received telegram is one.</td>
</tr>
<tr>
<td></td>
<td>9 (= 09 hex): The error bit in the receive telegram is set.</td>
</tr>
<tr>
<td></td>
<td>16 (= 10 hex): The receive telegram is too early.</td>
</tr>
<tr>
<td>Note regarding the message value:</td>
<td>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).</td>
</tr>
<tr>
<td></td>
<td>- check the electrical cabinet design and cable routing for EMC compliance</td>
</tr>
<tr>
<td></td>
<td>- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).</td>
</tr>
<tr>
<td></td>
<td>See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
</tr>
</tbody>
</table>

Reaction upon N: NONE
Acknowledge upon N: NONE
Reaction upon A: NONE
Acknowledge upon A: NONE

**F32835 (N, A) Encoder 2 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>Message class</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF1 (IASC/DCBRK, 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 concerned. The nodes do not send and receive in synchronism. Fault cause:</td>
</tr>
<tr>
<td></td>
<td>33 (= 21 hex): The cyclic telegram has not been received.</td>
</tr>
<tr>
<td></td>
<td>34 (= 22 hex): Timeout in the telegram receive list.</td>
</tr>
<tr>
<td></td>
<td>64 (= 40 hex): Timeout in the telegram send list.</td>
</tr>
</tbody>
</table>
4 Faults and alarms

4.2 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:
- carry out a POWER ON.
- replace the component involved.
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

F32836 (N, A) Encoder 2 DRIVE-CLiQ: Send error for DRIVE-CLiQ data
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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):
0000yyxx hex: yy = component number, xx = error cause
Remedy: Carry out a POWER ON.

F32837 (N, A) Encoder 2 DRIVE-CLiQ: Component fault
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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.
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.
A32840 Encoder 2 DRIVE-CLiQ: error below the signaling threshold

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ error has occurred below the signaling threshold.
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.
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
16 (= 10 hex):
The receive telegram is too early.
32 (= 20 hex):
Error in the telegram header.
33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telegram receive list.
35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.
64 (= 40 hex):
Timeout in the telegram send list.
65 (= 41 hex):
Telegram type does not match send list.
66 (= 42 hex):
Send error: The telegram buffer memory contains an error.
67 (= 43 hex):
Send error: The telegram buffer memory contains an error.
4 Faults and alarms

4.2 List of faults and alarms

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
- check the DRIVE-CLiQ wiring (interrupted cable, contacts, ...).
See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)

<table>
<thead>
<tr>
<th>F32845 (N, A)</th>
<th>Encoder 2 DRIVE-CLiQ: Cyclic data transfer error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| 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):
000yyxx 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) |
| Reaction upon N: | NONE                                             |
| Acknowl. upon N: | NONE                                            |
| Reaction upon A: | NONE                                             |
| Acknowl. upon A: | NONE                                             |

<table>
<thead>
<tr>
<th>F32850 (N, A)</th>
<th>Encoder 2: Encoder evaluation internal software error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Message class:</td>
<td>Hardware / software error (1)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>POWER ON</td>
</tr>
<tr>
<td>Cause:</td>
<td>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.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- replace the Sensor Module. - if required, upgrade the firmware in the Sensor Module. - contact the Hotline.</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>
### F32851 (N, A) Encoder 2 DRIVE-CLiQ (CU): Sign-of-life missing

**Message value:** Component number: %1, fault cause: %2

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, 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.
- carry out a POWER ON (power off/on) for 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

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, 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.
- 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.
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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
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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.
4 Faults and alarms

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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)

Remedy 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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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.

Remedy 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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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.
96 (= 60 hex):
Response received too late during runtime measurement.
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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.

<table>
<thead>
<tr>
<th>Reaction upon N</th>
<th>Acknowl. upon N</th>
<th>Reaction upon A</th>
<th>Acknowl. upon A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**F32895 (N, A) Encoder 2 DRIVE-CLiQ (CU): Alternating cyclic data transfer error**

**Message value:** Component number: %1, fault cause: %2
**Message class:** Internal (DRIVE-CLiQ) communication error (12)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**Reaction:** OFF1 (IASC/DCBRK, 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.

**Remedy:**
Carry out a POWER ON.
See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master)

<table>
<thead>
<tr>
<th>Reaction upon N</th>
<th>Acknowl. upon N</th>
<th>Reaction upon A</th>
<th>Acknowl. upon A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**F32896 (N, A) Encoder 2 DRIVE-CLiQ (CU): Inconsistent component properties**

**Message value:** Component number: %1
**Message class:** Internal (DRIVE-CLiQ) communication error (12)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
**Reaction:** OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, 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).

<table>
<thead>
<tr>
<th>Reaction upon N</th>
<th>Acknowl. upon N</th>
<th>Reaction upon A</th>
<th>Acknowl. upon A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
<th>Message value</th>
<th>Message class</th>
<th>Drive object</th>
<th>Reaction</th>
<th>Acknowledge</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>F32899 (N, A)</td>
<td>Encoder 2: Unknown fault</td>
<td>%1</td>
<td>Position/speed actual value incorrect or not available (11)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>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.</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>
<tr>
<td>A32902 (F, N)</td>
<td>Encoder 2: SPI-BUS error occurred</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
<td>NONE</td>
<td>Error when operating the internal SPI bus. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.</td>
<td>- replace the Sensor Module. - if required, upgrade the firmware in the Sensor Module. - contact the Hotline.</td>
</tr>
<tr>
<td>A32903 (F, N)</td>
<td>Encoder 2: I2C-BUS error occurred</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
<td>NONE</td>
<td>NONE</td>
<td>Error when operating the internal I2C bus. Fault value (r0949, interpret hexadecimal): Only for internal Siemens troubleshooting.</td>
<td>- replace the Sensor Module. - if required, upgrade the firmware in the Sensor Module. - contact the Hotline.</td>
</tr>
</tbody>
</table>
### Encoder 2: Parameterization error

**Message value:** Parameter: %1, supplementary information: %2  
**Message class:** Error in the parameterization / configuration / commissioning procedure (18)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S  
**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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):  
```
yyyyxxxx dec: 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.
```
```
yyyy = 11:
The hardware does not support track monitoring.
```
**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
### 4.2 List of faults and alarms

#### F32912  Encoder 2: Device combination is not permissible

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF1 (IASC/DCBRK, NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>PULSE INHIBIT</td>
</tr>
</tbody>
</table>
| 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). |

#### A32915 (F, N)  Encoder 2: Configuration error

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Error in the parameterization / configuration / commissioning procedure (18)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause:         | The configuration for encoder 2 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/DCBRK)  
  Acknowl. upon F: IMMEDIATELY  
  Reaction upon N: NONE  
  Acknowl. upon N: NONE |
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4.2 List of faults and alarms

**F32916 (N, A) Encoder 2: Parameterization fault**

- **Message value:** Parameter: %1, supplementary information: %2
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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.
- **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.

**A32920 (F, N) Encoder 2: Temperature sensor fault**

- **Message value:** Fault cause: %1, channel number: %2
- **Message class:** External measured value / signal state outside the permissible range (16)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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).
- **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).

**A32930 (N) Encoder 2: Data logger has saved data**

- **Message value:**
- **Message class:** Error in the parameterization / configuration / commissioning procedure (18)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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
- **Message class:** Application / technological function faulted (17)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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/DCBRK, OFF1, OFF2, OFF3, STOP2)
  **Acknowl. upon F:** IMMEDIATELY
  **Reaction upon N:** NONE
  **Acknowl. upon N:** NONE

---

**F32950** Encoder 2: Internal software error

- **Message value:** %1
- **Message class:** Hardware / software error (1)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** OFF1 (OFF2)
- **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 Sensor Module to a later version.
  - contact the Hotline.
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A32999 (F, N)</td>
<td>Encoder 2: Unknown alarm</td>
</tr>
<tr>
<td><strong>Message value:</strong></td>
<td>New message: %1</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</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 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 (%2124, 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><strong>Remedy:</strong></td>
<td>- replace the firmware on the Sensor Module by an older firmware version (%0148), - upgrade the firmware on the Control Unit (%0018).</td>
</tr>
<tr>
<td><strong>Reaction upon F:</strong></td>
<td>NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td><strong>Acknowl. upon F:</strong></td>
<td>IMMEDIATELY (POWER ON)</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>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F33125 (N, A)</td>
<td>Encoder 3: Amplitude error track A or B overcontrolled</td>
</tr>
<tr>
<td><strong>Message value:</strong></td>
<td>A track: %1, B-track: %2</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The amplitude of track A or B for encoder 3 exceeds the permissible tolerance band. Fault value (%0949, 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 &gt; 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 Sensor Modules for resolvers (e.g. SMC10): The nominal signal level is at 2900 mV (2.0 Vrms). The response threshold is &gt; 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.</td>
</tr>
<tr>
<td><strong>Remedy:</strong></td>
<td>- check that the encoder cables and shielding are routed in compliance with EMC. - replace the encoder or encoder cable.</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>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F33126 (N, A)</td>
<td>Encoder 3: Amplitude AB too high</td>
</tr>
<tr>
<td><strong>Message value:</strong></td>
<td>Amplitude: %1, Angle: %2</td>
</tr>
<tr>
<td><strong>Message class:</strong></td>
<td>Position/speed actual value incorrect or not available (11)</td>
</tr>
<tr>
<td><strong>Drive object:</strong></td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S</td>
</tr>
<tr>
<td><strong>Reaction:</strong></td>
<td>OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)</td>
</tr>
<tr>
<td><strong>Acknowledge:</strong></td>
<td>PULSE INHIBIT</td>
</tr>
<tr>
<td><strong>Cause:</strong></td>
<td>The amplitude (root of A^2 + B^2 or</td>
</tr>
</tbody>
</table>
Fault value (r0949, interpret hexadecimal):

\[ yyyy \text{ hex:} \]

\[ yyyy = \text{Angle} \]

\[ xxxx = \text{Amplitude, i.e. root from A}^2 + B^2 \text{ (16 bits without sign)} \]

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 \(> 1120 \text{ mV}\) 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 \(299A \text{ hex} = 10650 \text{ dec} \).

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.

**Reaction upon N:** NONE

**Acknowl. upon N:** NONE

**Reaction upon A:** NONE

**Acknowl. upon A:** NONE

---

**F33142 (N, A) Encoder 3: Battery voltage fault**

**Message value:** -

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, STOP2)

**Acknowledge:** IMMEDIATELY

**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 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

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:** OFF1 (IASC/DCBRK, NONE, OFF2, OFF3, 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 number)

**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
### 4.2 List of faults and alarms

#### A33442 (F, N) Encoder 3: Battery voltage pre-alarm
- **Message value:** -
- **Message class:** Position/speed actual value incorrect or not available (11)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** When switched-off, the encoder uses a battery to back up the multiturn information. The multiturn information can no longer be buffered if the battery voltage drops even further.
- **Remedy:** Replace battery.
- **Reaction upon F:** NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE

#### A33700 Encoder 3: Effectivity test does not supply the expected value
- **Message value:** Fault cause: %1 bin
- **Message class:** Safety monitoring channel has identified an error (10)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **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.

#### A33840 Encoder 3 DRIVE-CLiQ: error below the signaling threshold
- **Message value:** Component number: %1, fault cause: %2
- **Message class:** Internal (DRIVE-CLiQ) communication error (12)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** A DRIVE-CLiQ error has occurred below the signaling threshold. 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.
  - 10 (= 0A hex): The sign-of-life bit in the receive telegram is set.
  - 11 (= 0B hex): Synchronization error during alternating cyclic data transfer.
4 Faults and alarms

4.2 List of faults and alarms

16 (= 10 hex):
The receive telegram is too early.

32 (= 20 hex):
Error in the telegram header.

33 (= 21 hex):
The cyclic telegram has not been received.

34 (= 22 hex):
Timeout in the telegram receive list.

35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.

64 (= 40 hex):
Timeout in the telegram send list.

65 (= 41 hex):
Telegram type does not match send list.

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 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)

F33875 (N, A) Encoder 3 DRIVE-CLiQ (CU): Supply voltage failed

Message value: Component number: %1, fault cause: %2
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, 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 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

F33912 Encoder 3: Device combination is not permissible

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: OFF1 (IASC/DCBRK, NONE)
Acknowledge: PULSE INHIBIT
Cause: The selected device combination is not supported.
4 Faults and alarms

4.2 List of faults and alarms

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).

A34840 VSM DRIVE-CLiQ: error below the signaling threshold

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ error has occurred below the signaling threshold.

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.
10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.
11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.
16 (= 10 hex):
The receive telegram is too early.
32 (= 20 hex):
Error in the telegram header.
4 Faults and alarms

4.2 List of faults and alarms

33 (= 21 hex):
The cyclic telegram has not been received.
34 (= 22 hex):
Timeout in the telecommand receive list.
35 (= 23 hex):
Receive error: The telecommand buffer memory contains an error.
64 (= 40 hex):
Timeout in the telecommand send list.
65 (= 41 hex):
Telecommand type does not match send list.
66 (= 42 hex):
Send error: The telecommand buffer memory contains an error.
67 (= 43 hex):
Send error: The telecommand 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 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)

---

**F34851**

**VSM DRIVE-CLiQ (CU): Sign-of-life missing**

**Message value:** Component number: %1, fault cause: %2

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31

**Reaction:** 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 telecommand 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

**Message class:** Internal (DRIVE-CLiQ) communication error (12)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31

**Reaction:** 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:
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 telecommand does not match the receive list.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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):
00000yyxx 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.
### 4 Faults and alarms

#### 4.2 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>
</table>
| F34885     | VSM DRIVE-CLiQ (CU): Cyclic data transfer error                              | Component number: %1, fault cause: %2 | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 | NONE (OFF1, OFF2) | IMMEDIATELY | 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. | - 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                      | Component number: %1, fault cause: %2 | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 | NONE (OFF1, OFF2) | IMMEDIATELY | 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. | Carry out a POWER ON.                                                                                                     |
| F34887     | VSM DRIVE-CLiQ (CU): Component fault                                        | Component number: %1, fault cause: %2 | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 | NONE (OFF1, OFF2) | IMMEDIATELY | 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.
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.

F34895 VSM DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: 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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, 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).
### A35200 (F, N) TM: Calibration data

**Message value:** %1  
**Message class:** Hardware / software error (1)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31  
**Reaction:** NONE  
**Acknowledge:** NONE  
**Cause:** An error was detected in the calibration data of the Terminal Module.  
**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

- **Alarm value (r2124, interpret decimal):**
  - ddbcbaa 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).

- **Remedy:**
  - carry out a POWER ON (power off/on) for all components.  
  - Replace the component if necessary.

---

### F35207 (N, A) TM: Temperature fault/alarm threshold channel 0 exceeded

**Message value:** %1  
**Message class:** External measured value / signal state outside the permissible range (16)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31  
**Reaction:** 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

- **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]).  
  - 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
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F35208 (N, A)</td>
<td>TM: Temperature fault/alarm threshold channel 1 exceeded</td>
</tr>
<tr>
<td>F35209 (N, A)</td>
<td>TM: Temperature fault/alarm threshold channel 2 exceeded</td>
</tr>
</tbody>
</table>

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150

**Reaction:** 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 \( r4101[1] \leq 1650 \) 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

---

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<tr>
<td>F35209 (N, A)</td>
<td>TM: Temperature fault/alarm threshold channel 2 exceeded</td>
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</table>

**Message value:** %1

**Message class:** External measured value / signal state outside the permissible range (16)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150

**Reaction:** 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:
  
  - if \( r4101[2] > 1650 \) ohms, the temperature \( r4105[2] = 250 \) °C
  
  - if \( r4101[2] \leq 1650 \) ohms, the temperature \( r4105[2] = -50 \) °C

  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
4 Faults and alarms

4.2 List of faults and alarms

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<tr>
<td>F35210 (N, A)</td>
<td>TM: Temperature fault/alarm threshold channel 3 exceeded</td>
<td>%1</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>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 &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 The temperature actual value is displayed via connector output r4105[3] and can be interconnected. Remedy: - allow the temperature sensor to cool down to below p4102[7] - hysteresis (5 K, for TM150, can be set using p4118[3]). or - if required, set the fault response to NONE (p2100, p2101). See also: p4102</td>
</tr>
<tr>
<td>A35211 (F, N)</td>
<td>TM: Temperature alarm threshold channel 0 exceeded</td>
<td>%1</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>NONE</td>
<td>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 &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[0] = 1, 4), the following applies: - if r4101[0] &gt; 1650 ohms, the temperature r4105[0] = 250 °C - if r4101[0] &lt;= 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</td>
</tr>
</tbody>
</table>
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A35212 (F, N) TM: Temperature alarm threshold channel 1 exceeded
Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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

A35213 (F, N) TM: Temperature alarm threshold channel 2 exceeded
Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: NONE
Acknowledge: NONE
Cause: 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 "PTC thermistor" and "Bimetallic NC contact" (p4100[2] = 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[4] - hysteresis (5 K); for TM150, can be set using p4118[2].
See also: p4102
Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35214 (F, N) TM: Temperature alarm threshold channel 3 exceeded
Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: NONE
Acknowledge: NONE
Cause: The temperature measured using the temperature sensing of the Terminal Module (TM) (r4105[3]) has exceeded the threshold value to initiate this alarm (p4102[8]).
Note: For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[3] = 1, 4), the following applies:
4 Faults and alarms

4.2 List of faults and alarms

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[6] - hysteresis (5 K); for TM150, can be set using p4118[3].
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

F35220 (N, A) TM: Frequency limit reached for signal output
Message value: -
Message class: Application / technological function faulted (17)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM15DI_DO, TM31
Reaction: OFF1 (NONE, OFF2, OFF3)
Acknowledge: IMMEDIATELY (POWER ON)

Cause:
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.
SIMOTION (p4400 = 0) operating mode:
- If the TM41 has been configured as the technology project, this fault is also output in response to short-circuited A/B signals in X520.
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
- the output signals correspond to a speed, which is greater than the maximum speed (r1082 of TM41).

Remedy:
SIMOTION (p4400 = 0) operating mode:
- enter a lower speed setpoint (p1155).
- reduce the encoder pulse number (p0408).
- check track A/B for short-circuits.
SINAMICS (p4400 = 1) operating mode:
- enter a lower speed setpoint (p1155).
- reduce the encoder pulse number (p0408).

Notice:
The output signal is no longer monitored after changing the message type to "Alarm" (A).

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: -
Message class: Application / technological function faulted (17)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM15DI_DO, TM31
Reaction: 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 (> 1000 pulses).

Remedy:
- reduce the basic clock cycle (p0110, p0111).
- if required, replace the component (e.g. internal short-circuit).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### 4.2 List of faults and alarms

#### A35222 (F, N) TM: Encoder pulse number not permissible

**Message value:** %1

**Message class:** Error in the parameterization / configuration / commissioning procedure (18)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM15DI_DO, TM31

**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:**
- 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 number)

**Reaction upon F:** 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

**Message class:** Application / technological function faulted (17)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM15DI_DO, TM31

**Reaction:** NONE

**Acknowledge:** NONE

**Cause:** The entered zero mark offset is not permissible.

**Remedy:** Enter the zero mark offset in the permissible range (p4426).

**Reaction upon F:** 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

**Message class:** Hardware / software error (1)

**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31

**Reaction:** 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 function not supported

Message value: %1
Message class: Error in the parameterization / configuration / commissioning procedure (18)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM31
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: For fault value = 1:
- 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
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: 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]).
or
- 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].
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
Acknow, upon N: NONE
Reaction upon A: NONE
Acknow, upon A: NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<th>Cause</th>
</tr>
</thead>
</table>
| F35401   | Temperature fault/alarm threshold channel 5 exceeded | %1 | External measured value / signal state outside the permissible range (16) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150 | OFF2 (NONE, OFF1, OFF3) | IMMEDIATELY (POWER ON) | 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]).  
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.  
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]).  
- 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   | Temperature fault/alarm threshold channel 6 exceeded | %1 | External measured value / signal state outside the permissible range (16) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150 | OFF2 (NONE, OFF1, OFF3) | IMMEDIATELY (POWER ON) | 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]).  
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.  
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[13] - hysteresis (p4118[6]).  
- 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 |
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F35403 (N, A)  TM: Temperature fault/alarm threshold channel 7 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: 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[14], p4103[7]).
or
- fault threshold exceeded (p4102[15]).
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
The temperature actual value is displayed via connector output r4105[7] 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[15] - hysteresis (p4118[7]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102

F35404 (N, A)  TM: Temperature fault/alarm threshold channel 8 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: 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[16], p4103[8]).
or
- fault threshold exceeded (p4102[17]).
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
The temperature actual value is displayed via connector output r4105[8] 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[17] - hysteresis (p4118[8]).
- if required, set the fault response to NONE (p2100, p2101).
See also: p4102
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4.2 List of faults and alarms

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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
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: 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]).
  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

F35406 (N, A)  TM: Temperature fault/alarm threshold channel 10 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
Reaction: 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].
4 Faults and alarms

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**F35407 (N, A)**

**TM: Temperature fault/alarm threshold channel 11 exceeded**

- **Message value:** %1
- **Message class:** External measured value / signal state outside the permissible range (16)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
- **Reaction:** 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[22], p4103[11]).
    - or
    - fault threshold exceeded (p4102[23]).
  - Note:
    - For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[11] = 1, 4), the following applies:
    - The temperature actual value is displayed via connector output r4105[11] 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[23] - hysteresis (p4118[4]).
    - if required, set the fault response to NONE (p2100, p2101).
  - See also: p4102

**A35410 (F, N)**

**TM: Temperature alarm threshold channel 4 exceeded**

- **Message value:** %1
- **Message class:** External measured value / signal state outside the permissible range (16)
- **Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
- **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 (p2124, 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

**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
### 4 Faults and alarms

#### 4.2 List of faults and alarms

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<tr>
<td>A35411 (F, N)</td>
<td>Temperature alarm threshold channel 5 exceeded</td>
<td>%1</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>NONE</td>
<td>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 &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[5] = 1, 4), the following applies: - if r4101[5] &gt; 1650 ohms, the temperature r4105[5] = 250 °C - if r4101[5] &lt;= 1650 ohms, the temperature r4105[5] = -50 °C Alarm value (r2124, interpret decimal): Temperature actual value at the time of initiation [0.1 °C].</td>
<td>Allow the temperature sensor to cool down to below p4102[10] - hysteresis (p4118[5]). See also: p4102</td>
</tr>
<tr>
<td>A35412 (F, N)</td>
<td>Temperature alarm threshold channel 6 exceeded</td>
<td>%1</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>NONE</td>
<td>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 &quot;PTC thermistor&quot; and &quot;Bimetallic NC contact&quot; (p4100[6] = 1, 4), the following applies: - if r4101[6] &gt; 1650 ohms, the temperature r4105[6] = 250 °C - if r4101[6] &lt;= 1650 ohms, the temperature r4105[6] = -50 °C Alarm value (r2124, interpret decimal): Temperature actual value at the time of initiation [0.1 °C].</td>
<td>Allow the temperature sensor to cool down to below p4102[12] - hysteresis (p4118[6]). See also: p4102</td>
</tr>
<tr>
<td>A35413 (F, N)</td>
<td>Temperature alarm threshold channel 7 exceeded</td>
<td>%1</td>
<td>External measured value / signal state outside the permissible range (16)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150</td>
<td>NONE</td>
<td>NONE</td>
<td>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]).</td>
<td></td>
</tr>
</tbody>
</table>
Note:
For sensor type "PTC thermistor" and "Bimetallic NC contact" (p4100[7] = 1, 4), the following applies:
- if $r4101[7] > 1650$ ohms, the temperature $r4105[7] = 250 \, ^\circ\text{C}$
- if $r4101[7] \leq 1650$ ohms, the temperature $r4105[7] = -50 \, ^\circ\text{C}$
Alarm value ($r2124$, interpret decimal):
Temperature actual value at the time of initiation [0.1 °C].

Remedy:
See also: p4102

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

---

A35414 (F, N) TM: Temperature alarm threshold channel 8 exceeded

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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 $r4105[8] = 250 \, ^\circ\text{C}$
- if $r4101[8] \leq 1650$ ohms, the temperature $r4105[8] = -50 \, ^\circ\text{C}$
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
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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 $r4105[9] = 250 \, ^\circ\text{C}$
- if $r4101[9] \leq 1650$ ohms, the temperature $r4105[9] = -50 \, ^\circ\text{C}$
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  
**Message class:** External measured value / signal state outside the permissible range (16)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150  
**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

**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### A35417 (F, N) TM: Temperature alarm threshold channel 11 exceeded

**Message value:** %1  
**Message class:** External measured value / signal state outside the permissible range (16)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150  
**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:** p4102

**Reaction upon F:** NONE  
**Acknowl. upon F:** IMMEDIATELY (POWER ON)  
**Reaction upon N:** NONE  
**Acknowl. upon N:** NONE

### N35800 (F) TM: Group signal

**Message value:** -  
**Message class:** General drive fault (19)  
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31  
**Reaction:** OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)  
**Acknowledge:** NONE  
**Cause:** The Terminal Module has detected at least one fault.  
**Remedy:** Evaluates other actual messages.  
**Reaction upon F:** OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, STOP2)  
**Acknowl. upon F:** IMMEDIATELY
### 4.2 List of faults and alarms

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<th>Reaction upon F</th>
<th>Acknowl. upon F</th>
<th>Reaction upon N</th>
<th>Acknowl. upon N</th>
</tr>
</thead>
<tbody>
<tr>
<td>A35801 (F, N)</td>
<td>TM DRIVE-CLiQ: Sign-of-life missing</td>
<td>Component number: %1, fault cause: %2</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>NONE</td>
<td>A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal Module 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>
<td>- check the DRIVE-CLiQ connection. - replace the component involved. See also: p9916 (DRIVE-CLiQ data transfer error shutdown threshold slave)</td>
<td>NONE</td>
<td>IMMEDIATELY</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>A35802 (F, N)</td>
<td>TM: Time slice overflow</td>
<td>-</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>NONE</td>
<td>A time slice overflow has occurred on the Terminal Module.</td>
<td>Replace the Terminal Module.</td>
<td>NONE</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>A35803 (F, N)</td>
<td>TM: Memory test</td>
<td>-</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>NONE</td>
<td>An error has occurred during the memory test on the Terminal Module.</td>
<td>- check whether the permissible ambient temperature for the Terminal Module is being maintained. - replace the Terminal Module.</td>
<td>NONE</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>F35804 (N, A)</td>
<td>TM: CRC</td>
<td>%1</td>
<td>Hardware / software error (1)</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
<td>NONE</td>
<td>IMMEDIATELY (POWER ON)</td>
<td>A checksum error has occurred when reading-out the program memory on the Terminal Module.</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>
4 Faults and alarms
4.2 List of faults and alarms

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: EEPROM checksum error
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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)
Reaction upon N: NONE
Acknowl. upon N: NONE

A35807 (F, N) TM: Sequence control time monitoring
Message value: 
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal 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
4 Faults and alarms

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---

**Remedy:**
Carry out a POWER ON.

**F35837**

PTM DRIVE-CLiQ: Component fault

**Message value:**
Component number: %1, fault cause: %2

**Message class:**
Internal (DRIVE-CLiQ) communication error (12)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31

**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.

**A35840**

TM DRIVE-CLiQ: error below the signaling threshold

**Message value:**
Component number: %1, fault cause: %2

**Message class:**
Internal (DRIVE-CLiQ) communication error (12)

**Drive object:**
DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S

**Reaction:**
NONE

**Acknowledge:**
NONE

**Cause:**
A DRIVE-CLiQ error has occurred below the signaling threshold.

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.
- 10 (= 0A hex):
  The sign-of-life bit in the receive telegram is not set.
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11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

16 (= 10 hex):
The receive telegram is too early.

32 (= 20 hex):
Error in the telegram header.

33 (= 21 hex):
The cyclic telegram has not been received.

34 (= 22 hex):
Timeout in the telegram receive list.

35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.

64 (= 40 hex):
Timeout in the telegram send list.

65 (= 41 hex):
Telegram type does not match send list.

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 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)

F35845  TM DRIVE-CLiQ: Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: OFF1 (OFF2)
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communication error has occurred between the Control Unit and the Terminal Module (TM) 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)

F35850  TM: Internal software error
Message value: %1
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: 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.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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:
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.

F35887  TM DRIVE-CLiQ (CU): Component fault
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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.
4 Faults and alarms

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F35895  TM DRIVE-CLiQ (CU): Alternating cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: OFF2 (IASC/DCBRK, NONE, OFF1, OFF3, 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
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, 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).
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
A35903 (F, N) TM: I2C bus error occurred
Message value: -
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Acknoвл. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknoвл. upon N: NONE

A35904 (F, N) TM: EEPROM
Message value: -
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Acknoвл. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknoвл. upon N: NONE

A35905 (F, N) TM: Parameter access
Message value: -
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Acknoвл. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknoвл. upon N: NONE

A35906 (F, N) TM: 24 V power supply missing
Message value: %1
Message class: Supply voltage fault (undervoltage) (3)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
4 Faults and alarms

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10: TM15 24 V power supply for DI/DO 16 ... 23 (X522) 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
Message class: Hardware / software error (1)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: NONE
Acknowledge: NONE
Cause: The Terminal Module was not successfully initialized.
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: 
Message class: Overtemperature of the electronic components (6)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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: 
Message class: Communication error to the higher-level control system (9)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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)
## Faults and alarms

### 4.2 List of faults and alarms

| Reaction upon F: | NONE |
| Acknowl. upon F: | IMMEDIATELY (POWER ON) |
| Acknowl. upon N: | NONE |

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<td><strong>Alarm value (r2124, interpret decimal):</strong></td>
</tr>
</tbody>
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4 Faults and alarms

4.2 List of faults and alarms

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
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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.

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
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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

A35925 (F, N) TM: Error temperature sensor channel 5
Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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

**A35926 (F, N) TM: Error temperature sensor channel 6**

**Message value:** %1
**Message class:** External measured value / signal state outside the permissible range (16)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** When evaluating the temperature sensor, an error occurred.

Alarms (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

**A35927 (F, N) TM: Error temperature sensor channel 7**

**Message value:** %1
**Message class:** External measured value / signal state outside the permissible range (16)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** When evaluating the temperature sensor, an error occurred.

Alarms (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

**A35928 (F, N) TM: Error temperature sensor channel 8**

**Message value:** %1
**Message class:** External measured value / signal state outside the permissible range (16)
**Drive object:** DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
**Reaction:** NONE
**Acknowledge:** NONE
**Cause:** When evaluating the temperature sensor, an error occurred.
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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

A35929 (F, N) TM: Error temperature sensor channel 9

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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

A35930 (F, N) TM: Error temperature sensor channel 10

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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
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A35931 (F, N) TM: Error temperature sensor channel 11

Message value: %1
Message class: External measured value / signal state outside the permissible range (16)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150
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

A35999 (F, N) TM: Unknown alarm

Message value: New message: %1
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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: NONE (IASC/DCBRK, OFF1, OFF2, OFF3, STOP2)
Acknowl. upon F: IMMEDIATELY (POWER ON)
Reaction upon N: NONE
Acknowl. upon N: NONE

A36840 Hub DRIVE-CLiQ: error below the signaling threshold

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S
Reaction: NONE
Acknowledge: NONE
Cause: A DRIVE-CLiQ error has occurred below the signaling threshold.
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.
4 Faults and alarms

4.2 List of faults and alarms

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.

10 (= 0A hex):
The sign-of-life bit in the receive telegram is not set.

11 (= 0B hex):
Synchronization error during alternating cyclic data transfer.

16 (= 10 hex):
The receive telegram is too early.

32 (= 20 hex):
Error in the telegram header.

33 (= 21 hex):
The cyclic telegram has not been received.

34 (= 22 hex):
Timeout in the telegram receive list.

35 (= 23 hex):
Receive error: The telegram buffer memory contains an error.

64 (= 40 hex):
Timeout in the telegram send list.

65 (= 41 hex):
Telegram type does not match send list.

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 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)

F36851 Hub DRIVE-CLiQ (CU): Sign-of-life missing

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
<table>
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<tr>
<th>Fault Code</th>
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<th>Message Value</th>
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</thead>
</table>
| F36860     | Hub DRIVE-CLiQ (CU): Telegram error             | Component number: %1, fault cause: %2 | Internal (DRIVE-CLiQ) communication error (12) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 | NONE     | IMMEDIATELY | 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, ...). |
| F36875     | HUB DRIVE-CLiQ (CU): Supply voltage failed      | Component number: %1, fault cause: %2 | Supply voltage fault (undervoltage) (3) | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 | OFF1 (OFF2) | IMMEDIATELY | 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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: NONE
Acknowledge: IMMEDIATELY
Causes:
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 |
| 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. 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. |

### F36895  Hub DRIVE-CLiQ (CU): Alternating cyclic data transfer error

| Message value: | Component number: %1, fault cause: %2 |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 |
| 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. See also: p9915 (DRIVE-CLiQ data transfer error shutdown threshold master) |

### F36896  Hub DRIVE-CLiQ (CU): Inconsistent component properties

| Message value: | Component number: %1 |
| Drive object: | DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31 |
| 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. |
4 Faults and alarms

4.2 List of faults and alarms

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).

F40000 Fault at DRIVE-CLiQ socket X100
Message value: %1
Message class: General drive fault (19)
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
Message class: General drive fault (19)
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
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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4.2 List of faults and alarms

F40004  Fault at DRIVE-CLiQ socket X104
Message value: %1
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.

A40100  Alarm at DRIVE-CLiQ socket X100
Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: 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.
Remedy: Evaluate the alarm buffer of the specified object.

A40101  Alarm at DRIVE-CLiQ socket X101
Message value: %1
Message class: General drive fault (19)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause: 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.
Remedy: Evaluate the alarm buffer of the specified object.

A40102  Alarm at DRIVE-CLiQ socket X102
Message value: %1
Message class: General drive fault (19)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: NONE
Acknowledge: NONE
Cause: 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.
Remedy: Evaluate the alarm buffer of the specified object.
4 Faults and alarms

4.2 List of faults and alarms

A40103  Alarm at DRIVE-CLiQ socket X103
Message value:  %1
Message class:  General drive fault (19)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction:  NONE
Acknowledge:  NONE
Cause:  An alarm has occurred at the drive object at the DRIVE-CLiQ socket X103.
First alarm that has occurred for this drive object.
Alarm value (r2124, interpret decimal):
Remedy:  Evaluate the alarm buffer of the specified object.

A40104  Alarm at DRIVE-CLiQ socket X104
Message value:  %1
Message class:  General drive fault (19)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction:  NONE
Acknowledge:  NONE
Cause:  An alarm has occurred at the drive object at the DRIVE-CLiQ socket X104.
First alarm that has occurred for this drive object.
Alarm value (r2124, interpret decimal):
Remedy:  Evaluate the alarm buffer of the specified object.

A40105  Alarm at DRIVE-CLiQ socket X105
Message value:  %1
Message class:  General drive fault (19)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction:  NONE
Acknowledge:  NONE
Cause:  An alarm has occurred at the drive object at the DRIVE-CLiQ socket X105.
First alarm that has occurred for this drive object.
Alarm value (r2124, interpret decimal):
Remedy:  Evaluate the alarm buffer of the specified object.

F40799  CX32: Configured transfer end time exceeded
Message value:  
Message class:  Internal (DRIVE-CLiQ) communication error (12)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class:  Internal (DRIVE-CLiQ) communication error (12)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
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
Message class: Supply voltage fault (undervoltage) (3)
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
Message class:  Internal (DRIVE-CLiQ) communication error (12)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.

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
Message class:  Internal (DRIVE-CLiQ) communication error (12)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.

Remedy:
- carry out a POWER ON (power off/on).

F40837  CX32 DRIVE-CLiQ: Component fault

Message value:  Component number: %1, fault cause: %2
Message class:  Internal (DRIVE-CLiQ) communication error (12)
Drive object:  DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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.
4 Faults and alarms

4.2 List of faults and alarms

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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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
Remedy:
Upgrade the firmware of the component involved.

F40860  CX32 DRIVE-CLiQ (CU): Telegram error

Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
Reaction: OFF2
Acknowledge: IMMEDIATELY
Cause: A DRIVE-CLiQ communications error has occurred from the controller extension involved to the Control Unit.
4 Faults and alarms

4.2 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)

F40875 | CX32 DRIVE-CLiQ (CU): Supply voltage failed
--- | ---
Message value: | Component number: %1, fault cause: %2
Message class: | Supply voltage fault (undervoltage) (3)
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
4 Faults and alarms

4.2 List of faults and alarms

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.

<table>
<thead>
<tr>
<th>F40885</th>
<th>CX32 DRIVE-CLiQ (CU): Cyclic data transfer error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| 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)

<table>
<thead>
<tr>
<th>F40886</th>
<th>CX32 DRIVE-CLiQ (CU): Error when sending DRIVE-CLiQ data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| 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). |

<table>
<thead>
<tr>
<th>F40887</th>
<th>CX32 DRIVE-CLiQ (CU): Component fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>Component number: %1, fault cause: %2</td>
</tr>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>Fault detected on the DRIVE-CLiQ component concerned. Faulty hardware cannot be excluded.</td>
</tr>
</tbody>
</table>
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.

F40895 CX32 DRIVE-CLiQ (CU): Cyclic data transfer error
Message value: Component number: %1, fault cause: %2
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL, DC_CTRL_R, DC_CTRL_R_S, DC_CTRL_S, TM150, TM15DI_DO, TM31
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)

A50001 (F) PN/COMM BOARD: Configuration error
Message value: %1
Message class: Communication error to the higher-level control system (9)
Drive object: All objects
Reaction: NONE
Acknowledge: NONE
Cause:
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 (CBE2x remote controller number)
## 4 Faults and alarms

### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Remedy</th>
<th>CBE20:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reaction upon F:</td>
<td>NONE (OFF1, OFF2, OFF3)</td>
</tr>
<tr>
<td>Acknowl. upon F:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>

### A50002 (F) COMM BOARD: Alarm 2

| Message value: | %1 |
| Message class: | Communication error to the higher-level control system (9) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | 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: | CBE20 SINAMICS Link: |
| | Correct the parameter assignment. |
| | See also: p8871 (SINAMICS Link send telegram word PZD) |
| Reaction upon F: | NONE (OFF1, OFF2, OFF3) |
| Acknowl. upon F: | IMMEDIATELY |

### A50003 (F) COMM BOARD: Alarm 3

| Message value: | Info. 1: %1, info. 2: %2 |
| Message class: | Communication error to the higher-level control system (9) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | CBE20 SINAMICS Link: |
| | A specific telegram word (receive) is being used twice. |
| | 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: | CBE20 SINAMICS Link: |
| | Correct the parameter assignment. |
| Reaction upon F: | NONE (OFF1, OFF2, OFF3) |
| Acknowl. upon F: | IMMEDIATELY |

### A50004 (F) COMM BOARD: Alarm 4

| Message value: | Info. 1: %1, info. 2: %2 |
| Message class: | Communication error to the higher-level control system (9) |
| Drive object: | All objects |
| Reaction: | NONE |
| Acknowledge: | NONE |
| Cause: | 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. |
| | - drive object number p8872 > 16 with p8811 = 16. |
| | 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: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50005 (F) COMM BOARD: Alarm 5

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: 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: CBE20 SINAMICS Link:
Check the connection to the sender.

Reaction upon F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50006 (F) COMM BOARD: Alarm 6

Message value: Info. 1: %1, info. 2: %2

Message class: Communication error to the higher-level control system (9)

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: 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)

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: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY

A50010 (F) PN/COMM BOARD: Station name invalid

Message value: %1

Message class: Communication error to the higher-level control system (9)

Drive object: All objects

Reaction: NONE

Acknowledge: NONE

Cause: CBE20:
PROFINET Name of Station is invalid.

Remedy: CBE20:
Correct the name of the station (p8940) and activate (p8945 = 2).
See also: p8940 (CBE2x Name of Station)

Reaction upon F: NONE (OFF1, OFF2, OFF3)

Acknowl. upon F: IMMEDIATELY
A50020 (F)  
**PNCOMM BOARD: Second controller missing**

- **Message value:** -
- **Message class:** Communication error to the higher-level control system (9)
- **Drive object:** All objects
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** CBE20:
  
  The PROFINET function “Shared Device” has been activated (p8829 = 2). However, only the connection to a PROFINET controller is present. See also: p8829 (CBE2x remote controller number)

- **Remedy:** CBE20:
  
  Check the configuration of the PROFINET controllers as well as the p8829 setting.

- **Reaction upon F:** NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY

F60004 (N, A)  
**Armature circuit phase failure detected**

- **Message value:** %1
- **Message class:** Network fault (2)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2 (NONE)
- **Acknowledge:** IMMEDIATELY
- **Cause:** Phase failure in armature infeed.

  The line voltage rms value calculated from the area of each line half-wave (rectifier average value x harmonic factor) is less than the response value for phase failure monitoring or the distance between two line zero crossings in the same phase is more than 270 degrees or the distance between two line zero crossings in different phases is not between 30 and 90 degrees.

- Phase failure threshold set incorrectly (p50353)
- Armature phase failed
- Line contactor opened in operation
- Fuse blown on three-phase side of armature circuit
- Fuse blown in power unit

- **Fault value (r0949, interpret decimal):**
  1:
  - Power failure has occurred in armature infeed (UV, VW, WU)
  - r50047[1] = 0: First power failure in armature phase UV
  - r50047[1] = 1: First power failure in armature phase VW
  - r50047[1] = 2: First power failure in armature phase WU
  - r50047[2]: Incorrect voltage value as a % of p50078[0]
  2:
  - Wait time for new zero crossing has expired in one armature phase (UV, VW, WU)
  - r50047[1] = 0: No zero crossing in armature phase UV in excess of 270 °
  - r50047[1] = 1: No zero crossing in armature phase VW in excess of 270 °
  - r50047[1] = 2: No zero crossing in armature phase WU in excess of 270 °
  - r50047[2]: Time without zero crossing (= duration 270 °) of armature phase r50047[1] in ms
  3:
  - Line asymmetry in armature infeed (UV, VW, WU)
  - r50047[1]: Phase number of phase of last zero crossing (0 = UV, 1 = VW, 2 = WU)
  - r50047[2]: Phase number of phase of last-but-one zero crossing (0 = UV, 1 = VW, 2 = WU)
  - r50047[3]: Time of last raw zero crossing in ms
  - r50047[4]: Time of last-but-one raw zero crossing in ms
  - r50047[5]: Time of last positive refined zero crossing in phase UV in ms
  - r50047[6]: Time of last negative refined zero crossing in phase UV in ms
  - r50047[7]: Time of last positive refined zero crossing in phase VW in ms
  - r50047[8]: Time of last negative refined zero crossing in phase VW in ms
  - r50047[9]: Time of last positive refined zero crossing in phase WU in ms
4 Faults and alarms

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r50047[10]: Time of last negative refined zero crossing in phase WU in ms
r50047[11]: Last good 60 ° period in ms
See also: p50089 (Sequence control voltage at power unit wait time), p50095 (Sequence control DC circuit contactor wait time), p50691 (Sequence control line contactor feedback)

Remedy:
- Check threshold for phase failure (p50353).
- Check the field supply voltage.
- Check the fuses and line contactor.
See also: p50089 (Sequence control voltage at power unit wait time), p50353 (Line monitoring phase failure threshold)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60005 (N, A) Field circuit phase failure detected

Message value: %1
Message class: Network fault (2)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
A phase failure has been detected in the field circuit.
The line voltage rms value calculated from the area of each line half-wave (rectifier average value * harmonic factor) is less than the response value for phase failure monitoring or the distance between two line zero crossings of the voltage for the field converter is more than 270 degrees.
- Phase failure threshold set incorrectly (p50353)
- Field phase failed
- Line contactor opened in operation
- Fuse blown in field circuit
Fault value (r0949, interpret decimal):
1: Power failure in field infeed
Note:
r50047[1]: Incorrect voltage value as a % of p50078[1]
2: Wait time for new zero crossing has expired in the field phase.
Note:
r50047[1]: Time without zero crossing (= duration 270 °) of armature phase r50047[1] in ms
See also: p50089 (Sequence control voltage at power unit wait time)

Remedy:
- Check threshold for phase failure (p50353).
- Check the field supply voltage.
- Check the fuses and line contactor.
See also: p50089 (Sequence control voltage at power unit wait time)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60006 (N, A) Line monitoring undervoltage

Message value: %1
Message class: Network fault (2)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause:
The line voltage has undershot the permissible undervoltage limit for longer than the setting in p50361.
Fault value (r0949, interpret decimal):
1: Armature undervoltage occurred
2: Field undervoltage occurred
4 Faults and alarms

4.2 List of faults and alarms

---

**Note:**
- r50047[1] = 0: Undervoltage in armature phase UV
- r50047[1] = 1: Undervoltage in armature phase VW
- r50047[1] = 2: Undervoltage in armature phase WU
- r50047[1] = 3: Undervoltage in field phase

**Remedy:**
- Check monitoring limit for armature (p50078[0] * (1 + p50351/100%)).
- Check monitoring limit for field (p50078[1] * (1 + p50351/100%)).
- Check monitoring time (p50361).

See also: p50078 (Supply voltage rated value), p50351 (Line undervoltage threshold), p50361 (Line monitoring undervoltage delay time)

---

**F60007 (N, A) Line monitoring overvoltage**

- **Message value:** %1
- **Message class:** Network fault (2)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2 (NONE)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The line voltage has overshot the permissible overvoltage limit for longer than the setting in p50362.

Fault value (r0949, interpret decimal):
- 1: Armature overvoltage occurred
- 2: Field overvoltage occurred

**Remedy:**
- Check monitoring limit for armature (p50078[0] * (1 + p50352/100%)).
- Check monitoring limit for field (p50078[1] * (1 + p50352/100%)).
- Check monitoring time (p50362).

See also: p50078 (Supply voltage rated value), p50352 (Line overvoltage threshold), p50362 (Line monitoring overvoltage delay time)

---

**F60008 (N, A) Line frequency less than minimum line frequency**

- **Message value:** %1
- **Message class:** Network fault (2)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2 (NONE)
- **Acknowledge:** IMMEDIATELY
- **Cause:** The line frequency has undershot the set threshold for monitoring of the minimum line frequency for more than 40 ms.

Fault value (r0949, interpret decimal):
- 1: Armature supply frequency less than minimum line frequency
- 2: Field supply frequency less than minimum line frequency

**Remedy:**
- Check monitoring limit for armature (p50078[0] * (1 + p50352/100%)).
- Check monitoring limit for field (p50078[1] * (1 + p50352/100%)).
- Check monitoring time (p50362).

See also: p50078 (Supply voltage rated value), p50352 (Line overvoltage threshold), p50362 (Line monitoring overvoltage delay time)
4 Faults and alarms

4.2 List of faults and alarms

F60009 (N, A)  Line frequency greater than maximum line frequency

Message value:  %1
Message class:  Network fault (2)
Drive object:  DC_CTRL
Reaction:  OFF2 (NONE)
Acknowledge:  IMMEDIATELY

Cause:  The line frequency has overshot the set threshold for monitoring of the maximum line frequency for more than 40 ms.
Fault value (r0949, interpret decimal):
1: Armature supply frequency greater than maximum line frequency
2: Field supply frequency greater than maximum line frequency
Note:
r50047[1]: Incorrect frequency value in Hz
Remedy:  Check the threshold for monitoring the maximum line frequency (p50364).
See also:  p50364 (Line frequency maximum threshold)

Reaction upon N:  NONE
Acknowl. upon N:  NONE
Reaction upon A:  NONE
Acknowl. upon A:  NONE

F60010 (N, A)  Armature circuit uneven current distribution

Message value:  %1
Message class:  Ground fault / inter-phase short-circuit detected (7)
Drive object:  DC_CTRL
Reaction:  OFF2 (NONE)
Acknowledge:  IMMEDIATELY

Cause:  An uneven current distribution through the thyristors has been identified in the armature circuit.
Significantly less current flows in one thyristor than in the others.
Remarks:
- This monitoring is only effective if the average current value across all thyristors is greater than 20 % of r50072[1].
- The current in a thyristor is significantly lower, if, for a period of one second, the average value is less than 35 % of the average value across all thyristors.
Possible causes:
- A fuse has blown.
- A thyristor is not fired (defective thyristor, defective pulse transformer, defective firing electronics).
Fault value (r0949, interpret decimal):
Number of the thyristor that is conducting the significantly lower current.
Note:
r50047[1]: Average current value through all armature thyristors.
r50047[2]: Average current value through the thyristor with the excessively low current, in torque direction I.
r50047[3]: Average current value through the thyristor with the excessively low current, in torque direction II.
The current values as a % are referred to r50072[1].
Note:
Even though the response to this fault message is set to "NO" when using p2100/p2101, or the message type set to "Alarm" or "No message" when using p2118/p2119, in the case of a fault, the drive still exits the OPERATION (RUN) state and goes into state o4.1 (wait for the fuse monitoring OK message.)
Remedy:
- Check the fuses in the power unit.
- If required, perform a thyristor diagnostics routine (p50830).
See also:  p50830 (Thyristor diagnostics mode)
4 Faults and alarms

4.2 List of faults and alarms

F60012 (N, A)  P2P-IF: Telegram monitoring time expired

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The telegram monitoring time for communication via the peer-to-peer interface (P2P-IF) has expired. No further valid telegrams were received during the monitoring time (p50797).
Possible causes:
- Break in connecting cable
- Electromagnetic interference on the connecting cable
- Telegram monitoring time set too short (p50797)
Remedy:
- Check connecting cable and cable connection.
- Check that the connecting cable has been routed in compliance with EMC.
- Increase the telegram monitoring time if necessary (p50797).
See also: p50089 (Sequence control voltage at power unit wait time), p50790 (P2P IF operating mode), p50797 (P2P IF telegram monitoring time)

F60014 (N, A)  Parallel interface telegram monitoring time expired

Message value: -
Message class: Communication error to the higher-level control system (9)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The telegram monitoring time for communication via the parallel interface (Par-IF) has expired. No further valid telegrams were received during the monitoring time (p51807).
Possible causes:
- Break in connecting cable
- Electromagnetic interference on the connecting cable
- Telegram monitoring time set too short (p51807)
Remedy:
- Check connecting cable and cable connection.
- Check that the connecting cable has been routed in compliance with EMC.
- Increase the telegram monitoring time if necessary (p51807).
See also: p51807 (Parallel interface telegram monitoring failure time), p51808 (Parallel interface signal source for F60014)

A60018 (F, N)  Digital output overloaded

Message value: Fault cause: %1 bin
Message class: Ground fault / inter-phase short-circuit detected (7)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE
Cause: At least one digital output is overloaded or has short-circuited.
4 Faults and alarms

4.2 List of faults and alarms

Alarm value (r2124, interpret binary):
Bit 0 = 1: CUD digital output 0 (X177.19) is overloaded
Bit 1 = 1: CUD digital output 1 (X177.20) is overloaded
Bit 2 = 1: CUD digital output 2 (X177.21) is overloaded
Bit 3 = 1: CUD digital output 3 (X177.22) is overloaded
Bit 4 = 1: CUD digital output 4 (X177.15) is overloaded
Bit 5 = 1: CUD digital output 5 (X177.16) is overloaded
Bit 6 = 1: CUD digital output 6 (X177.17) is overloaded
Bit 7 = 1: CUD digital output 7 (X177.18) is overloaded

Note:
The fault value is equal to the inverted value of parameter r53021. Information about short-circuit monitoring for the individual digital outputs for further interconnection is available here.

Remedy:
Check the overloaded digital outputs and rectify the overload or short circuit.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F60025 (N, A) Brush length too short
Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A motor brush length which is too short has been reported via a binector input (p50486) for a period exceeding a permanently set delay time.
Note:
This message is also reported via binector output r53120.0.
Remedy:
- Check binector input p50486 and trace the generation of the signal back to the sensor.
- Check and if necessary update the motor's brush length.
See also: p50486 (Motor interface signal source for brush length)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60026 (N, A) Poor bearing condition
Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A defective motor bearing has been reported via a binector input (p50487) for a period exceeding a permanently set delay time.
Note:
This message is also reported via binector output r53120.1.
Remedy:
- Check binector input p50487 and trace the generation of the signal back to the sensor.
- Check and if necessary restore the motor's bearing condition.
See also: p50487 (Motor interface signal source for bearing condition)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
F60027 (N, A)  Motor fan fault
Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A defective motor fan has been reported via a binector input (p50488) for a period exceeding a permanently set delay time.

Note:
This message is also reported via binector output r53120.2.

Remedy:
- Check binector input p50488 and trace the generation of the signal back to the sensor.
- Check and if necessary replace the motor’s fan.

See also: p50488 (Motor interface signal source for motor fan)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60028 (N, A)  Motor temperature too high
Message value: -
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: A motor temperature which is too high has been reported via a binector input (p50489) for a period exceeding a permanently set delay time.
The motor temperature is too high.
Possible causes:
- Motor is overloaded
- Ambient temperature of the motor is too high
- Wire break or sensor not connected

Note:
This message is also reported via binector output r53120.3.

Remedy:
- Check binector input p50489 and trace the generation of the signal back to the sensor.
- Reduce the motor load if necessary.
- Check the ambient temperature and reduce if necessary.
- Check the wiring and the sensor connection.

See also: p50489 (Motor interface signal source for motor temperature)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60029 (N, A)  Motor temperature fault
Message value: -
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The motor temperature is higher than the threshold set in p50491 to trigger this fault.
Possible causes:
- Motor is overloaded
- Ambient temperature is too high
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**Note:**
r50047[1]: Motor temperature (in °C) for temperature sensor with continuous characteristic.
KTY84 (p50490 = 1) or
PT100 (p50490 = 6) or
NTC thermistor K227 (p50490 = 7) or
PT1000 (p50490 = 8)
Otherwise the value = 0.
See also: p50492 (Motor interface fault threshold for temperature monitoring)

Remedy:
- Check the threshold for triggering the fault (p50492).
- Reduce the motor load if necessary.
- Check the ambient temperature and reduce if necessary.

**F60031 (N, A) Excessive setpoint/actual value deviation**

Message value:
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The absolute value of the set/act deviation of the speed controller has exceeded the set threshold.
Note:
r50047[1]: n_set (connector input p50590)
r50047[2]: n_act (connector input p50591)
See also: p50388 (Messages for setpoint/actual value deviation 1 threshold), p50590 (Messages for set/act val dev 1 signal source for speed setpoint), p50591 (Messages for set/act val dev 1 signal source for speed act val)

Remedy:
- Optimize the speed controller (p50051).
- Check torque limiting (p50169).

**A60032 (F, N) Motor temperature alarm**

Message value:
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE
Cause: The motor temperature is higher than the threshold set in p50491 to trigger this alarm.
Possible causes:
- Motor is overloaded
- Ambient temperature is too high
Note:
r50047[1]: Motor temperature (in °C) for temperature sensor with continuous characteristic.
KTY84 (p50490 = 1) or
PT100 (p50490 = 6) or
NTC thermistor K227 (p50490 = 7) or
PT1000 (p50490 = 8)
Otherwise the value = 0.
See also: p50491 (Motor interface alarm threshold for temperature monitoring)
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---

**F60035 (N, A) Motor blocked**

**Message value:** -

**Message class:** Motor overload (8)

**Drive object:** DC_CTRL

**Reaction:** OFF2 (NONE, OFF1, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** The fault is triggered if the following conditions prevail for longer than the time set in p50355:
- The positive or negative armature current or torque limit has been reached
- Armature current \( r52109 > 1.0\% \)
- Speed actual value \( r52166 < p50356 \)

Note:
- \( r50047[1] \): Stall protection monitoring time \( p50355 \)
- \( r50047[2] \): Speed threshold \( p50356 \)
- \( r50047[3] \): Armature current \( r52109 \)
- \( r50047[4] \): Speed actual value \( r52166 \)
- \( r50047[5] \): Torque limit \( r53150 \)
- \( r50047[6] \): Armature current limits \( r53151 \)

See also: \( p50355 \) (Stall protection monitoring time)

**Remedy:**
- Reduce the motor load.
- Increase the current or torque limit.
- Check and if necessary increase the monitoring threshold.

See also: \( r52109 \) (Armature current actual value averaged over 6 cycles), \( r52166 \) (Speed controller actual value selection absolute value), \( r53150 \) (Speed limiting controller/torque limiting state), \( r53151 \) (Current limitation state)

---

**F60036 (N, A) Armature circuit/field circuit interrupted**

**Message value:** %1

**Message class:** General drive fault (19)

**Drive object:** DC_CTRL

**Reaction:** OFF2 (NONE, OFF1, OFF3)

**Acknowledge:** IMMEDIATELY

**Cause:** The firing angle is at the rectifier stability limit for more than 500 ms and the current is less than 1% of the rated DC current.

Fault value (\( r0949 \), interpret decimal):
1: Armature circuit
2: Field circuit

**Remedy:**
- Armature circuit or field circuit interrupted.
- Rectifier stability limit Alpha-G incorrectly set (\( p50150, p50250 \)).
- Drive operates at the Alpha-G limit (e.g. due to a line undervoltage condition).
- EMF too high, because the maximum speed has been set too high.
- EMF too high, because field weakening was not activated.
- EMF too high, because the field current was set too high.
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- EMF too high, because the CEMF crossover voltage was set too high (transition between normal and field weakening operation).
- replace the ribbon cable from the Allocation Board to the power interface (connector X108).

See also: r52116 (Armature current actual value internal absolute value), r52266 (Field current actual value internal absolute value), r53190 (Armature auto-reversing stage state), r53191 (Field auto-reversing stage state)

**A60037 (F, N) I2t monitoring alarm excessive motor temperature rise**

- **Message value:**
- **Message class:** Motor overload (8)
- **Drive object:** DC_CTRL
- **Reaction:** NONE
- **Acknowledgment:** NONE

**Cause:**
The I2t calculation shows that the motor's temperature rise is excessive. The alarm is triggered if the calculated motor temperature rise in r52309 > 100%.

Note:
r50047[1]: Temperature rise r52309
r50047[2]: Motor rated armature current p50100
r50047[3]: Continuous current factor r50113
r50047[4]: Device rated current r50072[1]
r50047[5]: Current armature current r52109
r50047[6]: Motor thermal time constant p50114

See also: p50114 (Motor thermal time constant), r52309 (Calculated motor temperature rise)

**Remedy:**
- Check the ambient temperature and reduce if necessary.
- Reduce the motor load.

See also: r52109 (Armature current actual value averaged over 6 cycles)

**F60038 (N, A) Overspeed threshold overshot**

- **Message value:**
- **Message class:** Motor overload (8)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2 (NONE, OFF1, OFF3)
- **Acknowledgment:** IMMEDIATELY

**Cause:**
The speed actual value has overshot the threshold for the positive or negative maximum speed.

Note:
p50083 = 3 (EMF as speed actual value):
- Interrupted armature circuit (fuse blown, contactor in the DC link has not closed)
In this particular case, the converter output voltage is not equal to the motor armature voltage, which is the reason why an incorrect speed actual value is determined.

Note:
r50047[1]: Maximum speed for positive direction of rotation (p50380)
r50047[2]: Maximum speed for negative direction of rotation (p50381)
r50047[3]: n_act (connector input p50595)

**Remedy:**
- Reduce the speed.
- Check the threshold for positive or negative direction of rotation and adjust if necessary (p50380, p50381).

See also: p50380 (Messages for overspeed threshold positive direction of rotation), p50381 (Messages for overspeed threshold negative direction of rotation)
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<th>Drive object</th>
<th>Reaction</th>
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<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| A60039 (F, N) | I2t monitoring alarm excessive power unit temperature rise | - | Power electronics faulted (5) | DC_CTRL | NONE | NONE | The temperature rise of the thyristors is more than 102% of the maximum permissible value. | - Check the ambient temperature and reduce if necessary.  
- Check the motor load and reduce if necessary. |
| F60041 (N, A) | Ramp-function generator parameter set cannot be selected | - | Hardware/software error (1) | DC_CTRL | OFF2 (NONE, OFF1, OFF3) | IMMEDIATELY | Ramp-function generator parameter sets 2 and 3 were selected simultaneously for more than 0.5 s via binector input p50637/p50638. The ramp-function generator parameter set is not changed over. The most recently selected ramp-function generator parameter set is retained. | - Check the selection of ramp-function generator parameter sets 2 and 3 and bar simultaneous selection.  
- Select the required ramp-function generator parameter set (p50637, p50638).  
See also: p50637 (RFG parameter set 2 selection signal source), p50638 (RFG parameter set 3 selection signal source) |
| F60042 (N, A) | Defective tachometer monitoring error | %1 | Actual position/speed value incorrect or not available (11) | DC_CTRL | OFF2 (NONE) | IMMEDIATELY | The ratio "Speed actual value/EMF actual value" (r52179/r52287) was less than +10% for more than approx. 40 ms. This ratio is then only checked if the EMF actual value is > p50357. | - Cable break affecting tachometer or incremental encoder TTL/HTL  
- Tachometer or incremental encoder TTL/HTL cable connected incorrectly  
- Incremental encoder TTL/HTL power supply has failed  
- Tachometer or incremental encoder TTL/HTL faulty  
- Parameters for incremental encoder TTL/HTL set incorrectly (p04000).  
- During operation with field reversal, the field polarity is not being reversed by the external hardware  
- Polarity for speed actual value set incorrectly (p50743)  
- Data for armature circuit set incorrectly (p50110 and p50111)  
- If p50083 = 3 (EMF as speed actual value): Interrupted armature circuit (e.g. fuse blown).  
- Device operates as slave connected in parallel. |
Fault value (r0949, interpret decimal):
1: Cable break affecting tachometer or incremental encoder TTL/HTL
2: Tachometer or incremental encoder TTL/HTL polarity incorrect

Note:
- r50047[1]: Speed actual value (r52179)
- r50047[2]: EMF actual value (r52287)
- See also: p50357 (Tachometer interruption monitoring threshold)

**Remedy:**
- Check the incremental encoder TTL/HTL's wiring, connections, and function.
- Check the power supply for the incremental encoder TTL/HTL.
- Check the polarity for the speed actual value (p50743).
- Perform an optimization run for the current controller in the armature circuit (p50051 = 25).
- Check the fuses in the armature circuit.
- If the device operates as slave connected in parallel: set p50357 = 100% (tachometer breakage not active).

---

**F60043 (N, A) EMF for braking operation too high**

**Message value:**
- 

**Message class:**
Motor overload (8)

**Drive object:**
DC_CTRL

**Reaction:**
OFF2 (NONE)

**Acknowledge:**
IMMEDIATELY

**Cause:**
The EMF actual value is too high for braking operation.
This fault is triggered if a firing angle greater than 165 ° would be required in the new torque direction immediately after a torque direction change (precisely because the EMF is so high).

What this actually means is that the fault is triggered if the following 5 conditions are met for a requested torque direction change (MI or MII is to be selected):
- \( p50272 = 0 \) (fault parameterized and not alarm + field weakening)
- An additional torque-free interval which might have been parameterized (\( p50160 > 0 \)) has expired.
- The parallel drive is ready for the new torque direction to be selected.
- The absolute value of the armature current requested in the new torque direction (r52118, filtered with p50190) is > 1% of r50072[1].
- The calculated firing angle (r52101) for the armature current requested in the new torque direction is > 165 ° or > p50151 if p50192 = 1.

Possible fault causes:
- "Speed-dependent field weakening" (p50081 = 0) has not been parameterized, although field weakening operation would be necessary for the required maximum speed.

Note:
With a firing angle \( \alpha_G = 30 ° \) (rectifier stability limit p50150) and low armature currents, EMF values up to the peak value of the phase-to-phase line voltage can be reached when motoring.
- Setpoint EMF for field weakening operation too high (parameter p50101 set too high)
- Line voltage dip
- EMF controller or field current controller not optimized; this can lead to excessive EMF when the drive accelerates.

Note:
- r50047[1]: Calculated firing angle (armature) prior to limiting (r52101)
- r50047[2]: EMF actual value currently measured (r52287)
- r50047[3]: Armature current controller setpoint (r52118)

**Remedy:**
- Reduce the speed.
- Activate the "Speed-dependent field weakening" function (p50081 = 1).
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<tr>
<th>F60044 (N, A)</th>
<th>Parallel interface node failure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Message class:</td>
<td>Communication error to the higher-level control system (9)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A fault involving the parallel connection of power units has occurred.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>1: There is a fault on one of the slaves.</td>
</tr>
<tr>
<td></td>
<td>2: One of the slaves is not in the Operation state (e.g. because its enable signal is at &quot;0&quot;)</td>
</tr>
<tr>
<td></td>
<td>3: There are fewer power units connected in parallel that are active than set using p51802.</td>
</tr>
<tr>
<td></td>
<td>4: There are fewer devices that are active than set using p51815.</td>
</tr>
<tr>
<td></td>
<td>50: The switchover to power unit topology 2 is not possible, as this SINAMICS DCM is not equipped with option S50.</td>
</tr>
<tr>
<td></td>
<td>51: The switchover to power unit topology 2 is not permissible for &quot;n+m&quot; operation.</td>
</tr>
<tr>
<td></td>
<td>52: The parallel switching master in power unit topology 2 is not the same as in power unit topology 1.</td>
</tr>
<tr>
<td></td>
<td>53: The feedback indicating the active power unit topology does not match the selected power unit topology.</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- Check the slave with fault.</td>
</tr>
<tr>
<td></td>
<td>- Check the enable signal of the slaves</td>
</tr>
<tr>
<td></td>
<td>- Check the setting for the minimum number of devices (p51802, p51815).</td>
</tr>
<tr>
<td></td>
<td>- Check the parameterization of the switchover of the power unit topology.</td>
</tr>
<tr>
<td></td>
<td>See also: p51802 (Parallel interface number of power units)</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>F60045 (N, A)</th>
<th>Standstill field not permitted in operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Message class:</td>
<td>Power electronics faulted (5)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>The standstill field was activated while the drive was operational.</td>
</tr>
<tr>
<td></td>
<td>The binector input p50692 to activate the standstill field must not have a 1 signal in operation.</td>
</tr>
<tr>
<td></td>
<td>See also: p50692 (Cl-loop field curr ctrl sig source for inject of standst field)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>If required, set binary input p50692 - used to activate the standstill field - to a 0 signal.</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>F60046 (N, A)</th>
<th>Wire break at &quot;Main setpoint&quot; analog input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A wire break has been detected at the CUD's &quot;Main setpoint&quot; analog input (X177.25/26).</td>
</tr>
<tr>
<td></td>
<td>This fault is triggered if p50700 = 2 (unipolar monitoring of current input (+4 mA to +20 mA)) is set and an input current of less than 2 mA is flowing.</td>
</tr>
<tr>
<td></td>
<td>Possible fault causes:</td>
</tr>
<tr>
<td></td>
<td>- Wire break or contact problem on supply line</td>
</tr>
<tr>
<td></td>
<td>- Parameter p50700 set incorrectly</td>
</tr>
</tbody>
</table>
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F60047 (N, A)  Wire break at analog input 1

| Message value: | - |
| Message class: | General drive fault (19) |
| Drive object: | DC_CTRL |
| Reaction: | OFF2 (NONE, OFF1, OFF3) |
| Acknowledge: | IMMEDIATELY |
| Cause: | A wire break has been detected at the CUD's analog input 1 (X177.27/28). This fault is triggered if p50700 = 2 (unipolar monitoring of current input (+4 mA to +20 mA)) is set and an input current of less than 2 mA is flowing. Possible fault causes:
- Wire break or contact problem on supply line
- Parameter p50710 set incorrectly

Note:
This fault is also indicated via binector output r53030.1.
See also: p50710 (CUD analog input 1 type)

Remedy:
- Check the wiring of the input terminals (X177.27/28) (cable break, contacts, etc).
- Check the parameter assignment for analog input 1 (p50710).

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60050 (N, A)  Optimization run aborted due to internal cause

| Message value: | %1 |
| Message class: | Hardware/software error (1) |
| Drive object: | DC_CTRL |
| Reaction: | OFF2 (NONE) |
| Acknowledge: | IMMEDIATELY |
| Cause: | An optimization run which had been started has been interrupted due to an internal cause. Fault value (r0949, interpret decimal):
100: Internal software error
Field current controller optimization run:
101: Alpha G limit reached when determining the Rf
102: Field current oscillation > 20 % when determining the Rf
103: Calculated field circuit resistance too high (> 4000 ohms)
104: Unable to ascertain field circuit inductance
105: Calculated field circuit inductance too high (> 1000 H)
106: Field current > 100% at start of optimization
107: RF determination failed (Rf <= 0)
108: Internal software error
Armature current controller optimization run:
201: Alpha G limit reached when determining the Ra
202: Armature current oscillation > 20 % when determining the Ra
203: Calculated armature circuit resistance too high (> 4000 ohms)
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205: Unable to determine armature circuit inductance.
206: Calculated armature circuit inductance too high (> 1000 H)
207: Armature current increased to > 120 % of r50072[1], although the firing angle was not able to be shifted any further.

Speed controller optimization run:
301: Unable to ascertain moment of inertia due to it being very small
302: Measurement of speed increase was not possible.
303: No change in speed when armature current is increased.
304: Speed remains at zero, although armature current is flowing.

EMF controller/Field characteristics optimization run:
401: Maximum permissible EMF setpoint is too small
402: Motor nominal field current is not being reached within 30 seconds
403: EMF (80 %) is not reached within set acceleration time (r50315[0]).
404: Incorrect direction of rotation
405: Negative field current setpoint limiting active
406: Field characteristic not falling uniformly
407: Torque limiting active
408: Armature current limiting active
409: Speed during measurement dropped by more than 12.5%

Field current controller friction compensation:
501: Speed not within the required tolerance bandwidth.
Optimization run for mechanical systems that can oscillate (torsional optimization):
601: speed according to p50565 is not reached within a specific time.
602: speed actual value is negative, although a positive setpoint is being input.

Converter Commutation Protector (CCP) optimization run:
701: p50790 (P2P/CCP operating mode) not set to communication with SIMOREG CCP.
702: Communication not established between SINAMICS DCM and SIMOREG CCP.
703: p51570 order number (MLFB) of the SIMOREG CCP is unknown.
704: Supply voltage of SINAMICS DCM and SIMOREG CCP do not match (p50078[0] and r51571).
705: This SINAMICS DCM is not intended for operation with SIMOREG CCP.
706: Armature circuit inductance is zero (p50111 = 0).
707: Calculated pre-charging voltage greater than the maximum achievable value for p51578.
708: Calculated chopper energy too high.

Note for fault value = 102:
- r50047[1]: Field current actual value (1 = 100 %)
- r50047[2]: Field current lower limit (1 = 100 %)
- r50047[3]: Field current upper limit (1 = 100 %)

Note for fault value = 103:
- r50047[1]: Calculated field circuit resistance in Ohm

Note for fault value = 104:
- r50047[1]: Number of valid measuring cycles
- r50047[2]: Number of required measuring cycles

Note for fault value = 105:
- r50047[1]: Calculated field circuit inductance in H

Note for fault value = 106:
- r50047[1]: Field current actual value (1 = 100 %)

Note for fault value = 107:
- r50047[1]: Calculated field circuit resistance in Ohm

Note for fault value = 202:
- r50047[1]: Armature current actual value (1 = 100 %)
- r50047[2]: Armature current lower limit (1 = 100 %)
- r50047[3]: Armature current upper limit (1 = 100 %)

Note for fault value = 203:
- r50047[1]: Calculated armature circuit resistance in Ohm
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Note for fault value = 205:
- r50047[1]: Number of required measuring cycles
- r50047[2]: Number of valid measuring cycles
- r50047[3]: Measurement run

Note for fault value = 206:
- r50047[1]: Calculate armature circuit inductance in H

Note for fault value = 301:
- r50047[1]: Number of measuring points (0 to 4 are possible, at least 2 are required)

Note for fault value = 401:
- r50047[1]: Nominal EMF (max. permissible EMF setpoint) (1 = 100 %)
- r50047[1]: Ideal nominal rectifier no-load output voltage (1 = 100 %)

Note for fault value = 402:
- r50047[1]: 1 = Timeout determining nominal speed, 2 = Timeout recording field characteristic

Note for fault value = 403:
- r50047[1]: EMF setpoint (1 = 100 %)
- r50047[2]: EMF actual value (1 = 100 %)
- r50047[3]: Ramp-up monitoring time in s

Note for fault value = 404:
- r50047[1]: Speed actual value (1 = 100 %)

Note for fault value = 405:
- r50047[1]: Index in meas. table
- r50047[2]: Field current setpoint (1 = 100 %)

Note for fault value = 406:
- r50047[1]: Field current setpoint (1 = 100 %)
- r50047[2]: Flux previous measuring point (1 = 100 %)
- r50047[3]: Flux actual measuring point (1 = 100 %)

Note for fault value = 407:
- r50047[1]: Index in meas. table
- r50047[2]: Field current setpoint (1 = 100 %)

Note for fault value = 408:
- r50047[1]: Index in meas. table
- r50047[2]: Field current setpoint (1 = 100 %)

Note for fault value = 409:
- r50047[1]: Index in meas. table
- r50047[2]: Field current setpoint (1 = 100 %)

Note for fault value = 501:
- r50047[1]: Speed setpoint (1 = 100 %)
- r50047[2]: Speed actual value (1 = 100 %)
- r50047[3]: Speed, lower limit (1 = 100 %)
- r50047[4]: Speed, upper limit (1 = 100 %)
- r50047[5]: 0 = No limit active, 1 = Current limit active, 2 = Torque limit active

Note for fault value = 601:
- r50047[1]: speed setpoint (1 = 100 %) according to p50565
- r50047[2]: Speed actual value (1 = 100 %)
- r50047[3]: permissible time in s, until the speed setpoint is reached

Note for fault value = 602:
- r50047[1]: Speed actual value (1 = 100 %)

Note for fault value = 701:
- r50047[1]: P2P/CCP operating mode

Note for fault value = 703:
- r50047[1]: determined index for order number (MLFB)
4 Faults and alarms

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Note for fault value = 704:
- r50047[1]: Rated supply voltage [V]
- r50047[2]: CCP rated supply voltage [V]
- r50047[3]: Line voltage tolerance DCM (1 = 100 %)
- r50047[4]: Line voltage tolerance CCP (1 = 100 %)

Note for fault value = 707:
- r50047[1]: Calculated pre-charging voltage [V]
- r50047[2]: Possible maximum value of the pre-charging voltage [V]

Note for fault value = 708:
- r50047[1]: Calculated chopper energy in the armature circuit [J]
- r50047[2]: CCP chopper energy [J]

Remedy:

For fault value = 101:
Check field circuit for interruption (e.g. due to blown fuse).
For fault value = 201:
Check armature circuit for interruption (e.g. due to blown fuse).
For fault value = 207:
Temporarily reduce the rated motor current (p50100) so that the rated motor current is significantly less than the
device rated current (e.g. p50100 = 50 % of r50072[1]).
For fault value = 401:
Check the setting of p50078[0], p50100, p50101 and p50110.
For fault value = 402:
Check the optimization of the field circuit.
For fault value = 403:
Check the optimization of the speed controller.
Check the setting of the acceleration times.
Check the setting of the current and torque limits.
For fault value = 404:
Check the polarity of speed actual value sensing (incremental encoder TTL/HTL, analog tachometer).
For fault value = 405:
Check the minimum motor excitation current (p50103).
For fault value = 407:
Check the torque limiting settings.
For fault value = 408:
Check the armature current limiting settings.
For fault value = 409:
Reduce the mechanical load.
For fault value = 701:
Check the setting of p50790 (value = 6).
For fault value = 704:
Check the setting of p50078[0].
For fault value = 706:
Check the optimization of the armature circuit.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60051 (N, A) Optimization run limit value violated

Message value: %1
Message class: Hardware/software error (1)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: During the optimization run, an attempt was made to set a parameter to a value outside its valid range of values.
The parameter value was set to the appropriate limit value.
The optimization run was completed in full.
Recommendation:
Check the parameter values set!
Fault value (r0949, interpret decimal):
Parameter number of the parameter causing the error.
Note:
r50047[1]: Incorrect value
r50047[2]: Limited value
r50047[3]: Lower limit value
r50047[4]: Upper limit value
Remedy:
You might have to set the parameter value manually.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

<table>
<thead>
<tr>
<th>F60052 (N, A)</th>
<th>Optimization run aborted due to external cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>An optimization run which had been started has been interrupted due to an external cause.</td>
</tr>
<tr>
<td></td>
<td>Fault value (r0949, interpret decimal):</td>
</tr>
<tr>
<td></td>
<td>101: ON command not set within 30 seconds</td>
</tr>
<tr>
<td></td>
<td>102: Following the ON command, operating state o0.x or o1.5 was not achieved within 1 minute.</td>
</tr>
<tr>
<td></td>
<td>103: Impermissible parameter setting for this optimization run</td>
</tr>
<tr>
<td></td>
<td>104: Internal software error</td>
</tr>
<tr>
<td></td>
<td>105: Internal software error</td>
</tr>
<tr>
<td></td>
<td>106: Internal software error</td>
</tr>
<tr>
<td></td>
<td>108: Operating state o0.x or o1.5 exited during the optimization run</td>
</tr>
<tr>
<td></td>
<td>109: The operating system does not allow the optimization run to access a parameter.</td>
</tr>
<tr>
<td></td>
<td>110: Internal software error</td>
</tr>
<tr>
<td></td>
<td>111: Internal software error</td>
</tr>
<tr>
<td></td>
<td>112: Data set changeover (DDS) during an optimization run</td>
</tr>
<tr>
<td></td>
<td>113: Data set changeover (CDS) during an optimization run</td>
</tr>
<tr>
<td></td>
<td>114: Enable for the positive direction of rotation missing.</td>
</tr>
<tr>
<td>Note for fault value = 103:</td>
<td></td>
</tr>
<tr>
<td>- r50047[1]:</td>
<td>1 = Sequence control optimization run, 2 = Field optimization run, 3 = EMF optimization run</td>
</tr>
<tr>
<td>- If r50047[1] = 1, r50047[2 to 3] are not relevant</td>
<td></td>
</tr>
<tr>
<td>- r50047[2]: Parameter number</td>
<td></td>
</tr>
<tr>
<td>- r50047[3]: Parameter value</td>
<td></td>
</tr>
<tr>
<td>Note for fault value = 104:</td>
<td></td>
</tr>
<tr>
<td>- r50047[1]: Parameter number (parameter number = 0 indicates a general fault is pending)</td>
<td></td>
</tr>
<tr>
<td>Note for fault value = 105:</td>
<td></td>
</tr>
<tr>
<td>- r50047[1]:</td>
<td>1 = General fault, 2 = Read parameter, 3 = Write parameter</td>
</tr>
<tr>
<td>- If r50047[1] = 1, r50047[2 to 3] are not relevant</td>
<td></td>
</tr>
<tr>
<td>- If r50047[1] = 2, r50047[2]: Parameter number</td>
<td></td>
</tr>
<tr>
<td>- If r50047[1] = 3, r50047[2]: Parameter number, r50047[3]: Parameter value</td>
<td></td>
</tr>
<tr>
<td>Note for fault value = 106:</td>
<td></td>
</tr>
<tr>
<td>- r50047[1]:</td>
<td>1 = Sequence control optimization run, 2 = Optimization run</td>
</tr>
<tr>
<td>- r50047[2]: OA return status word</td>
<td></td>
</tr>
<tr>
<td>Note for fault value = 107:</td>
<td></td>
</tr>
<tr>
<td>- r50047[1]: Parameter number</td>
<td></td>
</tr>
<tr>
<td>- r50047[2]: OA return status word</td>
<td></td>
</tr>
</tbody>
</table>
Note for fault value = 108:
- r50047[1]: New operating state

Note regarding fault value = 109:
- r50047[1]: 1 = General fault, 2 = Read parameter, 3 = Write parameter, 4 = Set optimization parameter
  - If r50047[1] = 1, r50047[2 to 3] are not relevant
  - If r50047[1] = 2, r50047[2] is: Parameter number, r50047[2]: OA return status word, r50047[3]: List index
  - If r50047[1] = 3, r50047[2]: Parameter number, r50047[3]: Parameter value, r50047[4]: OA return status word
  - If r50047[1] = 4, r50047[2]: Parameter number, r50047[3]: OA return status word

Note for fault value = 110:
- r50047[1]: Parameter number
- r50047[2]: OA return status word

Note for fault value = 111:
- r50047[1]: Parameter number
- r50047[2]: OA return status word

Note for fault value = 112:
- r50047[1]: Parameter number
- r50047[2]: Old DDS (0 to 3)
- r50047[3]: New DDS (0 to 3)

Note for fault value = 113:
- r50047[1]: Parameter number
- r50047[2]: Old CDS (0 to 1)
- r50047[3]: New CDS (0 to 1)

Note for fault value = 114:
- r50047[1]: Operating state
- r50047[2]: Value of the signal selected with p50672

Remedy:
Interpret the fault value and rectify the fault correspondingly.

For fault value = 103:
Check the parameter entered in r50047[2].

For fault value = 109:
Possible causes for this:
- Write protection and/or know-how protection are active, see r7760
- A PROFIDRIVE telegram p922 = 3, 4 or 220 is set

Remedy:
- Temporarily withdraw write protection and/or know-how protection
- Temporarily set p922 to 999

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60055 | Field characteristic not valid
---|---
Message value: | %1
Message class: | General drive fault (19)
Drive object: | DC_CTRL
Reaction: | OFF2
Acknowledge: | IMMEDIATELY
Cause: | Field weakening in conjunction with the optimization run for field weakening has not yet been performed. Fault value (r0949, interpret decimal):
  1: Closed-loop torque control selected (p50170 = 1) but valid field characteristic not yet recorded
  2: Speed-dependent field weakening selected (p50081 = 1) but valid field characteristic not yet recorded (p50117 = 0)
Remedy: | Record field characteristic.
  See also: p50081 (Field weakening activation), p50117 (Field characteristic status), p50170 (Selection of control type for closed-loop current/torque control)
### F60056  Important parameter not set

<table>
<thead>
<tr>
<th>Message value</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause         | Settings required for operation have not yet been made or connected components have not yet been commissioned. Fault value (r0949, interpret decimal):
  1: Actual value channel for speed controller not selected (p50083)
  2: Rated armature current of the motor not set (p50100).
  3: Rated field current of the motor not set (p50102).
  Note:
  Only necessary if p50082 > 0.
  4: Rated DC current for the external field device not set (p51838).
  Note:
  Only necessary if p50082 >= 21.
  5: Device commissioning not performed/completed (p0009 not equal to 0).
  6: Drive commissioning not performed/completed (p0010 not equal to 0).
  7: An internal field (p50082 = 1 to 4) has been selected for a device without a field power unit (option L10)
  8: Field characteristic (p50120 ... p50139) not rising uniformly.
  9: Reference speed (p2000) not set (factory setting value must be modified)!
  10: Control Module: Connection of measurement cables for line voltage not set (p51821)
  11: Control Module: Rated armature DC current not set (p51822).

**Remedy:** Make the setting as appropriate for the fault value displayed.

### F60057 (N, A)  Armature current sensing fault

<table>
<thead>
<tr>
<th>Message value</th>
<th>-</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class</td>
<td>Power electronics faulted (5)</td>
</tr>
<tr>
<td>Drive object</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause         | The message is triggered if there are opposing current and torque directions. Monitoring is active as soon as the current values overshoot the device rated current by 20%.
  Note:
  r50047[1]: Torque direction
  r50047[2]: Current scan value
  r50047[3]: Selected current sensing
  r50047[3] = 1: Current transformer phase UV
  r50047[3] = 2: Current transformer phase UW
  r50047[3] = 3: Current transformer phase VW
  r50047[3] = 4: External V-circuit
  r50047[3] = 5: External current sensing (shunt)
  r50047[3] = 6: Current sensing via analog input
  See also: p51824 (Current transformer configuration), p51852 (Current actual value sensing analog input configuration)

**Remedy:** Check current transformer/shunt.

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE
4 Faults and alarms

4.2 List of faults and alarms

F60058  Parameter settings not consistent

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause: | Inconsistent values have been set in parameters depending on each other. Fault value (r0949, interpret decimal):
0: Field weakening active (p50081 = 1) is not permissible when the EMF is used as speed setpoint (p50083 = 3).
1: Thyristor blocking voltage calculation active (p50166 = 1) for line frequencies > 65 Hz (p50364) is not permissible.
2: Setting of p51799 does not match the setting of p51800, p51802 and p51803.
3: For a line frequency > 65 Hz, p51800 must be < 10.
4: Setting of p50075 does not match the setting of p51799 (dynamic overload capability not permissible for single-phase operation).
5: Single-phase operation (p51799 = 1) not permissible for this device type.
6: Thyristor blocking voltage calculation (p50166 = 1) not possible for this device.
7: If p50083[D] = 2, p0400[0] = 0 is not permissible and if p50083[D] = 5, p0400[1] = 0 is not permissible.
8: For p50830 > 0, p51800 > 1 is not permissible , except 11 and 21 (thyristor diagnostics is only permissible for a single drive and for a parallel master).
9: For p50075 = 0, p50067 > 1 is not permissible.
10: Line frequency > 120 Hz is not permissible for this power unit (p50364).
11: For a 12-pulse parallel connection, p50153 = 2 is not permissible. |
| Remedy: | Make the setting as appropriate for the fault value displayed. |

F60061  Thyristor test unsuccessful

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Power electronics faulted (5)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause: | With the thyristor test activated (p50830), a fault was detected for at least one thyristor. Fault value (r0949, interpret decimal):
1: Thyristor defective (V11 and/or V24)
2: Thyristor defective (V12 and/or V25)
3: Thyristor defective (V13 and/or V26)
4: Thyristor defective (V14 and/or V21)
5: Thyristor defective (V15 and/or V22)
6: Thyristor defective (V16 and/or V23)
8: Ground fault in the armature circuit
11: Thyristor cannot be fired (V11)
12: Thyristor cannot be fired (V12)
13: Thyristor cannot be fired (V13)
14: Thyristor cannot be fired (V14)
15: Thyristor cannot be fired (V15)
16: Thyristor cannot be fired (V16)
17: Two or more thyristors from V11 ... V16 cannot be fired
21: Thyristor cannot be fired (V21)
22: Thyristor cannot be fired (V22)
23: Thyristor cannot be fired (V23)
24: Thyristor cannot be fired (V24)
25: Thyristor cannot be fired (V25)
26: Thyristor cannot be fired (V26)
27: Two or more thyristors from V21 ... V26 cannot be fired
31: Thyristor cannot block (V11 or V21)
32: Thyristor cannot block (V12 or V22) |
33: Thyristor cannot block (V13 or V23)
34: Thyristor cannot block (V14 or V24)
35: Thyristor cannot block (V15 or V25)
36: Thyristor cannot block (V16 or V26)
41: Thyristor cannot be fired (V11 or V16)
42: Thyristor cannot be fired (V13 or V14)
45: Thyristor cannot be fired (V21 or V26)
46: Thyristor cannot be fired (V23 or V24)
99: Defective thyristor cannot be identified

Note 1:
If "Thyristor defective" or "Thyristor cannot block" is signaled, then the corresponding thyristor module should be replaced.
Possible reasons why thyristors could be destroyed:
- Interrupted snubber circuit.
- Current controller and precontrol not optimized (excessively high current peaks).
- Cooling not guaranteed (e.g. a fan is not running, ambient temperature too high, incorrect fan direction of rotation (incorrect rotating field), air flow too low, very dirty heat sink).
- Excessively high voltage peaks in the line supply.
- External short-circuit or ground fault present (check the armature circuit).

Note 2:
If "Thyristor cannot be fired" is signaled, then this is generally caused by a fault in the firing circuit and not by a defective thyristor.
Possible causes:
- Firing pulse cable to the thyristor involved interrupted.
- Connector X11 or X21 incorrectly inserted.
- Flat cable X108 either not correctly inserted or interrupted.
- Defective electronics module or gating module.
- Gate cable in the thyristor module internally interrupted.

Note 3:
For a Control Module, this fault can also be initiated by other fault causes.
- Incorrect assignment of the firing pulses to the thyristors.
- Incorrect current actual value sensing connection.
- Incorrect parameterization of the current actual value sensing (p51822, p51823, p51824).
- Incorrect parameterization of the power unit type (p51825).

Remedy:
Interpret the fault value and information and replace the appropriate thyristor.

F60062 (N, A) Communication error to the voltage sensing

Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: Communication to one of the two voltage sensing devices is faulted or interrupted.
Fault value (r0949, interpret decimal):
1: Armature voltage sensing
2: Field voltage sensing

Note:
- r50047[1]: Counter CRC error, armature
- r50047[2]: Counter, communication error, armature
- r50047[3]: Counter, CRC error, field
- r50047[4]: Counter, communication error, field

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
4 Faults and alarms

4.2 List of faults and alarms

F60063 (N, A) Incorrect calibration values for analog inputs/outputs

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause:         | The factory-set calibration values on the electronics module for the analog inputs/outputs are implausible. Fault value (r0949, interpret decimal):

1: Analog input 0 (X177.25/26), voltage input, offset incorrect value
2: Analog input 0 (X177.25/26), voltage input, +10 V incorrect value
3: Analog input 0 (X177.25/26), voltage input, -10 V incorrect value
4: Analog input 0 (X177.25/26), voltage input, reference value incorrect
5: Analog input 0 (X177.25/26), current input, offset incorrect value
6: Analog input 0 (X177.25/26), current input, +20 mA incorrect value
7: Analog input 0 (X177.25/26), current input, -20 mA incorrect value
8: Analog input 0 (X177.25/26), current input, reference value incorrect
9: Analog input 1 (X177.27/28), voltage input, offset incorrect value
10: Analog input 1 (X177.27/28), voltage input, +10 V incorrect value
11: Analog input 1 (X177.27/28), voltage input, -10 V incorrect value
12: Analog input 1 (X177.27/28), voltage input, reference value incorrect
13: Analog input 1 (X177.27/28), current input, offset incorrect value
14: Analog input 1 (X177.27/28), current input, +20 mA incorrect value
15: Analog input 1 (X177.27/28), current input, -20 mA incorrect value
16: Analog input 1 (X177.27/28), current input, reference value incorrect
17: Analog input 2 (X177.29/30), voltage input, offset incorrect value
18: Analog input 2 (X177.29/30), voltage input, +10 V incorrect value
19: Analog input 2 (X177.29/30), voltage input, -10 V incorrect value
20: Analog input 2 (X177.29/30), voltage input, reference value incorrect
21: Analog input 3 (X177.1/2), voltage input, offset incorrect value
22: Analog input 3 (X177.1/2), voltage input, +10 V incorrect value
23: Analog input 3 (X177.1/2), voltage input, -10 V incorrect value
24: Analog input 3 (X177.1/2), voltage input, reference value incorrect
25: Analog input 4 (X177.3/4), voltage input, offset incorrect value
26: Analog input 4 (X177.3/4), voltage input, +10 V incorrect value
27: Analog input 4 (X177.3/4), voltage input, -10 V incorrect value
28: Analog input 4 (X177.3/4), voltage input, reference value incorrect
29: Analog input 5 (X177.5/6), voltage input, offset incorrect value
30: Analog input 5 (X177.5/6), voltage input, +10 V incorrect value
31: Analog input 5 (X177.5/6), voltage input, -10 V incorrect value
32: Analog input 5 (X177.5/6), voltage input, reference value incorrect
33: Analog input 6 (X177.7/8), voltage input, offset incorrect value
34: Analog input 6 (X177.7/8), voltage input, +10 V incorrect value
35: Analog input 6 (X177.7/8), voltage input, -10 V incorrect value
36: Analog input 6 (X177.7/8), voltage input, reference value incorrect
37: Analog input XT1.103/104, voltage input, offset incorrect value
38: Analog input XT1.103/104, voltage input, +25 V incorrect value
39: Analog input XT1.103/104, voltage input, -25 V incorrect value
40: Analog input XT1.103/104, voltage input, reference value incorrect
41: Analog input XT1.103/104, voltage input, offset incorrect value
42: Analog input XT1.103/104, voltage input, +80 V incorrect value
43: Analog input XT1.103/104, voltage input, -80 V incorrect value
44: Analog input XT1.103/104, voltage input, reference value incorrect
45: Analog input XT1.103/104, voltage input, offset incorrect value
46: Analog input XT1.103/104, voltage input, +270 V incorrect value
4 Faults and alarms

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47: Analog input XT1.103/104, voltage input, -270 V incorrect value
48: Analog input XT1.103/104, voltage input, reference value incorrect
49: Analog output 0 (X177.49/50), offset incorrect value
50: Analog output 0 (X177.49/50), -10 V incorrect value
51: Analog output 0 (X177.49/50), +10 V incorrect value
52: Analog output 0 (X177.49/50), reference value incorrect
53: Analog output 1 (X177.51/52), offset incorrect value
54: Analog output 1 (X177.51/52), -10 V incorrect value
55: Analog output 1 (X177.51/52), +10 V incorrect value
56: Analog output 1 (X177.51/52), reference value incorrect

Note:
r50047[1]: Incorrect calibration value

Remedy:
Replace the electronics module with the incorrect calibration values.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60064 (N, A) Error communicating with second processor TMS320

Message value: -
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: Communication with the second processor (TMS320) has failed.

Note:
r50047[1]: Communication counter in send direction
r50047[2]: Communication counter in receive direction

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

F60065 (N, A) Software update on second processor (TMS320) failed

Message value: %1
Message class: Hardware/software error (1)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY
Cause: The updating of the software for the second processor (TMS320) has failed.

Fault value (r0949, interpret decimal):
This value indicates the state in which the fault occurred.
2: Wait for the TMS320 bootloader to be ready.
3: Check the version of the TMS320 bootloader.
4: Check the version of the TMS320 application software.
5: Wait for the TMS320 to exit the bootloader.
6: Wait for the TMS320 to load its Flash API.
7: Wait for the TMS320 to delete its Flash EPROM.
8: Send a section of code 8 KB in size to the TMS320.
9: Wait for the TMS320 to request a new 8 KB section of code.
10: Wait until the TMS320 application software has been started.
11: Wait until the TMS320 is ready for a new command.
4 Faults and alarms

4.2 List of faults and alarms

100: Bootloader version not compatible.
101: TMS version not compatible.

Note:
r50047[1]: Error bits. Indicate in which of the following states errors occurred.
Bit 0 = 1: Initialization
Bit 1 = 1: TMS320 status
Bit 2 = 1: Bootloader version
Bit 3 = 1: TMS320 version
Bit 4 = 1: TMS320 start
Bit 5 = 1: Load Flash interface
Bit 6 = 1: Delete Flash
Bit 7 = 1: Write Flash
Bit 8 = 1: Request code
Bit 9 = 1: TMS320 start
Bit 10 = 1: Read message

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

F60066 (N, A) Error communicating with sensors
Message value: %1
Message class: Internal (DRIVE-CLiQ) communication error (12)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: An error occurred when polling the fan speeds and temperature sensors.
Fault value (r0949, interpret decimal):
1: Data not received
2: Fan monitoring or temperature sensors not switched over

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

F60067 (N, A) Fault temperature too high
Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The temperature at one of the temperature sensors has exceeded the highest permissible temperature to initiate this fault.
Fault value (r0949, interpret decimal):
1: Overtemperature at sensor 1 (sensor an XT5).
2: Overtemperature at sensor 2 (sensor an XT6).
3: Overtemperature at sensor 3 (sensor an XT7).
4: Overtemperature at the sensor control module (A7105, A7106, A7107, A7108, A7109).

Note:
r50047[1]: Temperature sensor 1
r50047[2]: Temperature sensor 2
r50047[3]: Temperature sensor 3
4 Faults and alarms

4.2 List of faults and alarms

r50047[4]: Gating module temperature
r50047[5]: CUD module temperature

Remedy:
- Check the ambient temperature and reduce if necessary.
- Reduce the load.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60068 (N, A) Incorrect calibration values for power unit

Message value: %1
Message class: Hardware/software error (1)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY

Cause: The calibration values for the power unit are missing or incorrect.
Fault value (r0949, interpret decimal):
1x: Power unit for armature
2x: Power unit for field
x = 1: Unable to read compensation data
x = 2: Unknown compensation data format
x = 3: Incorrect compensation data CRC
x = 4: The measuring points contained in the compensation data do not rise uniformly.
x = 5: No compensation values can be calculated from the compensation data.
x = 6: The signal offset calculated from the compensation data is impermissibly high.

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

F60069 (N, A) Invalid order number (MLFB)

Message value: %1
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: OFF2 (NONE)
Acknowledge: IMMEDIATELY

Cause: The data read from the power unit (serial number, MLFB, accessory options) is invalid.
Fault value (r0949, interpret decimal):
1: The serial number is invalid or missing.
2: The order number (MLFB) is invalid or missing.
3: The accessory options are invalid.
4: Incorrect serial number CRC
5: Incorrect MLFB CRC
6: Incorrect accessory options CRC
7: The MLFB read out is not known to the software.
8: Unable to read data.
9: MLFB cannot be changed in current operating state.
Note for fault value = 1, 4:
r50047[1]: 1st digit of serial number
r50047[2]: 2nd digit of serial number
... 
r50047[30]: 30th digit of serial number

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4 Faults and alarms

4.2 List of faults and alarms

Note for fault value = 2, 5, 7:
- r50047[1]: 1st digit of MLFB
- r50047[2]: 2nd digit of MLFB
  ...
- r50047[30]: 30th digit of MLFB

Note for fault value = 3, 6:
- r50047[1]: 1st digit of accessory options
- r50047[2]: 2nd digit of accessory options
  ...
- r50047[30]: 30th digit of accessory options

Note for fault value = 9:
- r50047[1]: Operating state

Remedy:
Send your SINAMICS DC MASTER to the manufacturer's plant or an authorized repair center.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A60080 (F, N)  Alarm temperature too high

Message value:  %1
Message class:   Overtemperature of the electronic components (6)
Drive object:   DC_CTRL
Reaction:       NONE
Acknowledge:    NONE
Cause:          The temperature at one of the temperature sensors has exceeded the highest permissible temperature to initiate this alarm.

Alarm value (r/2124, interpret decimal):
1: Overtemperature at sensor 1 (sensor an XT5).
2: Overtemperature at sensor 2 (sensor an XT6).
3: Overtemperature at sensor 3 (sensor an XT7).
4: Overtemperature at the sensor control module (A7105, A7106, A7107, A7108, A7109).

Note:
- r50047[1]: Temperature sensor 1
- r50047[2]: Temperature sensor 2
- r50047[3]: Temperature sensor 3
- r50047[4]: Gating module temperature
- r50047[5]: CUD module temperature

Remedy:
- Check the ambient temperature and reduce if necessary.
- Reduce the load.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

A60081 (F, N)  Alarm module temperature exceeded

Message value:  -
Message class:   Overtemperature of the electronic components (6)
Drive object:   DC_CTRL
Reaction:       NONE
Acknowledge:    NONE
Cause:          The temperature on the Control Unit DC MASTER (CUD) has exceeded the alarm value (temperature above 90 °C).

Note:
- r50047[1]: Module temperature (in °C)
- r50047[2]: Reference voltage -10 V (in volts)
4 Faults and alarms

4.2 List of faults and alarms

A60082 (F, N)  
Alarm derating factor K1 limit value fallen below  
Message value: -  
Message class: Overtemperature of the electronic components (6)  
Drive object: DC_CTRL  
Reaction: NONE  
Acknowledge: NONE  
Cause: For a drive device equipped with option L99, derating (reduced power) is calculated depending on the air intake temperature. The calculated derating factor K1 has fallen below the set limit value (p50066).  
Note:  
r50047[1]: air intake temperature in °C (sensor at XT6)  
r50047[2]: derating factor K1  
See also: p50066 (Power unit I2t monitoring derating factor K1 limit value)  
Remedy: Check the air intake temperature and reduce if necessary.  
Reaction upon F: NONE (OFF1, OFF2, OFF3)  
Acknowl. upon F: IMMEDIATELY  
Reaction upon N: NONE  
Acknowl. upon N: NONE

F60090 (N, A)  
Fault module temperature exceeded  
Message value: -  
Message class: Overtemperature of the electronic components (6)  
Drive object: DC_CTRL  
Reaction: OFF2 (NONE, OFF1, OFF3)  
Acknowledge: IMMEDIATELY  
Cause: The temperature on the Control Unit DC MASTER (CUD) has exceeded the fault value (temperature above 95 °C).  
Note:  
r50047[1]: Module temperature (in °C)  
r50047[2]: Supply voltage -10 V (in volts)  
r50047[3]: Supply voltage +10 V (in volts)  
r50047[4]: Temperature sensor 1 (in °C)  
Remedy: Check the ambient temperature and reduce if necessary.  
Reaction upon N: NONE  
Acknowl. upon N: NONE  
Reaction upon A: NONE  
Acknowl. upon A: NONE

F60091 (N, A)  
Reference voltage P10 outside tolerance  
Message value: -  
Message class: General drive fault (19)  
Drive object: DC_CTRL  
Reaction: OFF2 (NONE)  
Acknowledge: IMMEDIATELY  
Cause: The reference voltage P10 (+10 V) at terminal X177.31 lies outside the tolerance (deviation greater than +/-5%).  
Note:  
r50047[1]: Reference voltage +10 V (in volts)  
r50047[2]: Reference voltage -10 V (in volts)  
r50047[3]: Module temperature (in °C)
4 Faults and alarms

4.2 List of faults and alarms

F60092 (N, A) Reference voltage N10 outside tolerance

- Message value:
- Message class: General drive fault (19)
- Drive object: DC_CTRL
- Reaction: OFF2 (NONE)
- Acknowledge: IMMEDIATELY
- Cause: The reference voltage N10 (-10 V) at terminal X177.32 lies outside the tolerance (deviation greater than +/-5%).
  Note:
  r50047[1]: Reference voltage -10 V (in volts)
  r50047[2]: Reference voltage +10 V (in volts)
  r50047[3]: Module temperature (in °C)

- Remedy: Check the power supply.
- Reaction upon N: NONE
- Acknowl. upon N: NONE
- Reaction upon A: NONE
- Acknowl. upon A: NONE

F60093 (N, A) Power supply P5 overloaded

- Message value:
- Message class: General drive fault (19)
- Drive object: DC_CTRL
- Reaction: OFF2 (NONE)
- Acknowledge: IMMEDIATELY
- Cause: Power supply P5 (+5 V) at connector X179.1 is overloaded.
  Note:
  r50047[1]: Reference voltage +10 V (in volts)
  r50047[2]: Reference voltage -10 V (in volts)
  r50047[3]: Module temperature (in °C)

- Remedy: Identify the reason for the overload and rectify the situation.
- Reaction upon N: NONE
- Acknowl. upon N: NONE
- Reaction upon A: NONE
- Acknowl. upon A: NONE

F60094 (N, A) Power supply P15 overloaded

- Message value:
- Message class: General drive fault (19)
- Drive object: DC_CTRL
- Reaction: OFF2 (NONE)
- Acknowledge: IMMEDIATELY
- Cause: Power supply P15 (+15 V) at terminal X177.41 is overloaded.
  Note:
  r50047[1]: Reference voltage +10 V (in volts)
  r50047[2]: Reference voltage -10 V (in volts)
  r50047[3]: Module temperature (in °C)

- Remedy: Identify the reason for the overload and rectify the situation.
- Reaction upon N: NONE
- Acknowl. upon N: NONE
- Reaction upon A: NONE
- Acknowl. upon A: NONE
### 4 Faults and alarms

#### 4.2 List of faults and alarms

<table>
<thead>
<tr>
<th>Fault Code (N, A)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>F60095 (N, A)</td>
<td>Power supply P24 overloaded</td>
</tr>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>Power supply P24 (+24 V) at terminal X177.9 or X177.10 is overloaded.</td>
</tr>
<tr>
<td>Note:</td>
<td>-</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Identify the reason for the overload (e.g. digital outputs) and rectify the situation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F60096 (N, A)</th>
<th>Temperature sensor faulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Message class:</td>
<td>Internal (DRIVE-CLiQ) communication error (12)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>A cable break or a short circuit has been detected on at least one temperature sensor.</td>
</tr>
<tr>
<td>Fault value (r0949, interpret decimal):</td>
<td>1: A cable break has occurred. 2: A short circuit has occurred.</td>
</tr>
<tr>
<td>Note:</td>
<td>-</td>
</tr>
<tr>
<td>Remedy:</td>
<td>Evaluate the fault and, if the temperature sensor is faulty, run a wiring and performance check.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>F60097 (N, A)</th>
<th>Power supply faulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>-</td>
</tr>
<tr>
<td>Message class:</td>
<td>Power electronics faulted (5)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>The power supply is not working correctly.</td>
</tr>
<tr>
<td>Note 1:</td>
<td>-</td>
</tr>
<tr>
<td>Remedy:</td>
<td>-</td>
</tr>
</tbody>
</table>

**Note:**
- r50047[1]: Reference voltage +10 V (in volts)
- r50047[2]: Reference voltage -10 V (in volts)
- r50047[3]: Module temperature (in °C)
4 Faults and alarms

4.2 List of faults and alarms

Note 2:
For SINAMICS DCM with 2 CUD, the following applies:
After carrying out a reset (p0972 > 0 or p0976 = 200) at a CUD, then this fault is output at the other. In this case, the fault has no significance and can be acknowledged.

Remedy: Check the power supply.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A60098 (F, N) System utilization high

Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE
Cause: The average computing time utilization (r9976[1]) for the system is greater than 95 %.
Remedy: Reduce computing time utilization by.
The following options are available to do this:
- check the number of cyclically calculated blocks (DCC), and if required reduce.
- assign DCC blocks to runtime groups with a longer sampling time.
- check the number of cyclically calculated function blocks (FBLOCKS), and if required reduce.
- assign function blocks to runtime groups with a longer sampling time.
- remove DRIVE-CLiQ components that are not required.
- deactivate control blocks that are not required (p50899). This must be especially taken into account for a CUD right.

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F60099 (N, A) System utilization too high

Message value: -
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The average computing time utilization (r9976[1]) for the system is greater than 100 %.

Note:
r50047[1]: Averaged computing time utilization (in %)
r50047[2]: Maximum computing time utilization (in %)

Remedy: Reduce computing time utilization by.
The following options are available to do this:
- check the number of cyclically calculated blocks (DCC), and if required reduce.
- assign DCC blocks to runtime groups with a longer sampling time.
- check the number of cyclically calculated function blocks (FBLOCKS), and if required reduce.
- assign function blocks to runtime groups with a longer sampling time.
- remove DRIVE-CLiQ components that are not required.
- deactivate control blocks that are not required (p50899). This must be especially taken into account for a CUD right.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE
### F60104 (N, A) Armature circuit line voltage not OK

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>Network fault (2)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>On power-up, the time set in p50089 represents the maximum wait time for voltage at the power connections and for field current in operating states o5 and o4 combined. On power-up, the time set in p50095 represents the maximum wait time for &quot;Line contactor feedback&quot; in operating state o3.3 (if activated, see p50691). This fault is triggered if the above times elapse in one of these operating states. - Thresholds for the line monitoring incorrectly set (p50078, p50351, p50352, p50353, p50363, p50364). - Armature voltage not OK (phase failure, undervoltage/overvoltage, underfrequency/overfrequency). - Line contactor not picking up - Fuse blown on three-phase side of armature circuit - Fuse blown in power unit - Interruption affecting thyristor firing pulse cable (auxiliary cathodes at connections X12, X14, X16 are used for voltage transmission). Fault value (r0949, interpret decimal): 2: Wait time set in p50089 has expired in operating state o4.0. 3: Fuse blown on three-phase side of armature circuit 6: Wait time set in p50095 has expired in operating state o3.3. Note for fault value = 2: - r50047[1]: line state (r53145) Bit 0 = 1: Armature supply line, overvoltage Bit 1 = 1: Armature supply line, undervoltage Bit 2 = 1: Armature supply line, overfrequency Bit 3 = 1: Armature supply line, underfrequency Bit 4 = 1: Armature supply line, phase failure Bit 5 = 1: Field supply line, overvoltage Bit 6 = 1: Field supply line, undervoltage Bit 7 = 1: Field supply line, overfrequency Bit 8 = 1: Field supply line, underfrequency Bit 9 = 1: Field supply line, phase failure Bit 10 = 1: Armature supply line OK Bit 11 = 1: Field supply line OK Bit 12 = 1: clockwise phase sequence Bit 13 = 1: Line symmetrical See also: p50089 (Sequence control voltage at power unit wait time), p50095 (Sequence control DC circuit contactor wait time), p50691 (Sequence control line contactor feedback)</td>
</tr>
<tr>
<td>Remedy:</td>
<td>- Check the thresholds for the line monitoring (p50078, p50351, p50352, p50353, p50363, p50364). - Check line voltage and line contactor. - Check fuses for armature circuit. - Check thyristor firing pulse cable (X12, X14, X16). See also: p50089 (Sequence control voltage at power unit wait time), p50353 (Line monitoring phase failure threshold)</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>
### F60105 (N, A) Field current monitoring fault in field circuit

| Message value: | %1 |
| Message class: | Network fault (2) |
| Drive object: | DC_CTRL |
| Reaction: | OFF2 (NONE) |
| Acknowledge: | IMMEDIATELY |

**Cause:** Field current monitoring has detected erroneous behavior.
- Field phase failed
- Line contactor not picking up
- Fuse blown in field circuit
- Field current controller and/or field current controller pre-control not optimized or optimization is very poor.

**Fault value (r0949, interpret decimal):**
1: The field current actual value was smaller than the percentage of the field current setpoint set in p50396.
2: The field line voltage was not available within the time set in p50089.
3: The field current was not available within the time set in p50089.
4: The external field current monitoring has responded (BI: p50265 = 1/0 signal).

**Note for fault value = 1:**
- r50047[1]: Setpoint at field current controller input (r52268)
- r50047[2]: Actual value at field current controller input (r52265)
- r50047[3]: External monitoring (p50265)
- r50047[4]: Operating mode (p50082)
- r50047[5]: Threshold for monitoring (p50396)

**Remedy:**
- Check field phases.
- Check line contactor.
- Check fuses in field current circuit.
- Perform an optimization run for the field current controller (p50051 = 24).
- Check the threshold and time for field current monitoring (p50396, p50397).

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE

### F60106 (N, A) Short-circuit voltage Uk too high

| Message value: | %1 |
| Message class: | General drive fault (19) |
| Drive object: | DC_CTRL |
| Reaction: | OFF2 (NONE, OFF1, OFF3) |
| Acknowledge: | IMMEDIATELY |

**Cause:** The per unit short-circuit voltage of the line supply is greater than 10 %.
Permissible values are between 2 and 10 %.

**See also:** r50073 (Device rated direct current field), p50082 (Field power unit operating mode), p50396 (Field current monitoring setpoint factor), p50397 (Field current monitoring fault delay time), r52265 (CI-loop field curr ctrl current controller actual value), r52268 (Closed-loop field current control current controller setpoint)

**Remedy:** Check the dimensioning of the commutating reactors or the line transformer.

**Reaction upon N:** NONE
**Acknowl. upon N:** NONE
**Reaction upon A:** NONE
**Acknowl. upon A:** NONE
4 Faults and alarms

4.2 List of faults and alarms

F60137 (N, A)  I2t monitoring fault excessive motor temperature rise

Message value: -
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The I2t calculation shows that the motor's temperature rise is excessive.
The fault is triggered if the calculated motor temperature rise in r52309 > 110%.
Note:
r50047[1]: Temperature rise r52309
r50047[2]: Motor rated armature current p50100
r50047[3]: Continuous current factor r50113
r50047[4]: Device rated current r50072[1]
r50047[5]: Current armature current r52109
r50047[6]: Motor thermal time constant p50114
See also: p50114 (Motor thermal time constant), r52309 (Calculated motor temperature rise)
Remedy:
- Check the ambient temperature and reduce if necessary.
- Reduce the motor load.
See also: r52109 (Armature current actual value averaged over 6 cycles)
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

F60139 (N, A)  I2t monitoring fault excessive power unit temperature rise

Message value: -
Message class: Overtemperature of the electronic components (6)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY
Cause: The temperature rise of the thyristors is more than 102 % of the maximum permissible value.
Remedy:
- Check the ambient temperature and reduce if necessary.
- Check the motor load and reduce if necessary.
Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A60143 (F, N)  Reduction of the field current setpoint for an excessively high EMF during braking active

Message value: -
Message class: Motor overload (8)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE
Cause: Reduction of the field current setpoint for an excessively high EMF during braking is active.
See also: p50272 (Field current reduction activation)
Remedy: Not necessary.
The alarm automatically disappears after braking has expired.
Reaction upon F: NONE (OFF2)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
### A60165 (F, N) Fan end of service life has been reached or exceeded

- **Message value:** -
- **Message class:** Overtemperature of the electronic components (6)
- **Drive object:** DC_CTRL
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** At least one device fan has reached the end of its service life - or has exceeded it.
- **Remedy:** Replace the device fan and reset the operating hours.
  
  See also: r50960 (Device fan operating hours display), p50961 (Device fan service life), p50962 (Device fan reset operating hours)

- **Reaction upon F:** NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE

### A60166 (F, N) Alarm fan speed too slow

- **Message value:** -
- **Message class:** Overtemperature of the electronic components (6)
- **Drive object:** DC_CTRL
- **Reaction:** NONE
- **Acknowledge:** NONE
- **Cause:** The fan speed is too slow. The fan is probably blocked or faulty.
  
  **Note:**
  
  r50047[1]: Speed fan 1 (in revolutions/s)
  r50047[2]: Speed fan 2 (in revolutions/s)
  r50047[3]: Speed fan 3 (in revolutions/s)
  r50047[4]: Speed fan 4 (in revolutions/s)

- **Remedy:** Check the fan and replace if necessary.

- **Reaction upon F:** NONE (OFF1, OFF2, OFF3)
- **Acknowl. upon F:** IMMEDIATELY
- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE

### F60167 (N, A) Fault fan speed too slow

- **Message value:** -
- **Message class:** Overtemperature of the electronic components (6)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2 (NONE, OFF1, OFF3)
- **Acknowledge:** IMMEDIATELY
- **Cause:** a) The fan speed is too slow. The fan is probably blocked or faulty.
  
  b) The AC fan was switched off in operation or before the fan run on time p50096 expired by an external fan control.
  
  **Note 1:**
  
  r50047[1]: Speed fan 1 (in revolutions/s)
  r50047[2]: Speed fan 2 (in revolutions/s)
  r50047[3]: Speed fan 3 (in revolutions/s)
  r50047[4]: Speed fan 4 (in revolutions/s)

  **Note 2:**
  
  Fault message F60167 can only be acknowledged after the fan run on time p50096 has expired!

- **Remedy:** a) Check the fan and replace if necessary.
  
  b) Use the fan control inside the device ! See function block diagram 8047 or 8049.

- **Reaction upon N:** NONE
- **Acknowl. upon N:** NONE
- **Reaction upon A:** NONE
- **Acknowl. upon A:** NONE
### A60168 (F, N) Memory card not plugged in

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>NONE</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>NONE</td>
</tr>
</tbody>
</table>
| Cause: | The data recorded with the recorder function could not be saved on the memory card. Possible causes: 
- Memory card not plugged in 
- Memory card defective |
| Note: | If the save function is performed without errors, the data is saved on the memory card under "DATA\LOG\Tack.csv". 
Fault value (r0949, interpret decimal): 
1: Unable to create or open the file 
2: Unable to write to the file 
3: Unable to write all data to the file |
| Remedy: | Plug in a functional memory card (SecureDigital card, SD card). |
| Reaction upon F: | NONE (OFF1, OFF2, OFF3) |
| Acknowl. upon F: | IMMEDIATELY |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |

### F60203 (N, A) External fault triggered

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause: | An external fault has been triggered via terminal 124/125 on the Control Module. 
Fault value (r0949, interpret decimal): 
Input signal which triggered the fault. 
Note: 
r50047[1]: External fault mode (p51833) 
See also: p51833 (External fault mode) |
| Remedy: | Eliminate the causes of this fault. |
| Reaction upon N: | NONE |
| Acknowl. upon N: | NONE |
| Reaction upon A: | NONE |
| Acknowl. upon A: | NONE |

### F60204 (N, A) Fuse monitoring has responded

<table>
<thead>
<tr>
<th>Message value:</th>
<th>%1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
</tbody>
</table>
| Cause: | Fuse monitoring on the Control Module has detected at least one blown fuse. 
Fault value (r0949, interpret decimal): 
1: Monitoring of slot X23B (p51831[0]) has responded. 
2: Monitoring of slot X23C (p51831[1]) has responded. 
3: Monitoring of slot X23D (p51831[2]) has responded. |
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4: Monitoring of slot X23E (p51831[3]) has responded.
5: Monitoring of slot X23F (p51831[4]) has responded.

Note:
r50047[1]: Fuse number (XS1, XS2 to XS6)
See also: p51831 (Fuse monitoring activation)

Remedy:
- Analyze the blown fuse.
- Replace or close fuses as necessary.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A60266 (F, N) Alarm fan not OK

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE

Cause:
For a control module without option Z01... Z15, the following applies:
The signal at terminal 122/123 signals "Fan not OK".
The fan might be blocked or faulty.
Alarm value (r2124, interpret decimal):
Alarm value 1: Signal at terminal 122/123 signals "Fan not OK".
r50047[1]: Fan monitoring mode (p51832)

Remedy:
- Check wiring of "Fan OK" message via input terminal 122/123.
- Check the setting of the mode for fan monitoring (p51832).
- Check the fan and replace if necessary.
See also: p51832 (Fan monitoring configuration), p51835 (Delay times for device fan monitoring)

Reaction upon F: NONE (OFF1, OFF2, OFF3)
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE

F60267 (N, A) CM: Fan not OK

Message value: %1
Message class: Overtemperature of the electronic components (6)
Drive object: DC_CTRL
Reaction: OFF2 (NONE, OFF1, OFF3)
Acknowledge: IMMEDIATELY

Cause:
For a control module without option Z01... Z15, the following applies:
The signal at terminal 122/123 signals "Fan not OK".
The fan might be blocked or faulty.
Alarm value (r2124, interpret decimal):
Alarm value 1: Signal at terminal 122/123 signals "Fan not OK".
r50047[1]: Fan monitoring mode (p51832)
For a control module with option Z01...Z15, the following applies:
The fault threshold for the differential pressure was fallen below.
Alarm value 2: differential pressure at LT1 fallen below
Alarm value 3: differential pressure at LT2 fallen below
r50047[1]: Fan monitoring mode (p51832)

Remedy:
- Check wiring of "Fan OK" message via input terminal 122/123.
- Check the setting of the mode for fan monitoring (p51832).
- Check the fan and replace if necessary.

See also: p51832 (Fan monitoring configuration), p51835 (Delay times for device fan monitoring)

Remedy:
- Check wiring of "Fan OK" message via input terminal 122/123.
- Check the setting of the mode for fan monitoring (p51832).
- Check the fan and replace if necessary.

See also: p51832 (Fan monitoring configuration), p51835 (Delay times for device fan monitoring)

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

**F60300 Commutation failure**

- **Message value:** %1
- **Message class:** General drive fault (19)
- **Drive object:** DC_CTRL
- **Reaction:** OFF2
- **Acknowledge:** IMMEDIATELY
- **Cause:** Commutation failure or overcurrent has occurred or a test command was entered via p51583.
  
  Possible causes of the commutation failure:
  - Line voltage dip during regenerative operation.
  - Armature current control loop not optimized.
  
  Fault value (r0949, interpret decimal):
  
  1:
  - Commutation was not successful because the thyristor being turned off did not accept the blocking voltage (only for p50166 = 1).
  
  r50047[0]: Decision criterion (= 1)
  r50047[1]: Thyristor state (= r53146)
  r50047[2]: Fired thyristor pairs
  Bit 0 = 1: Thyristor 1 in MI was fired
  ...
  Bit 13 = 1: Thyristor 6 in MII was fired
  
  r50047[3]: Actual armature firing angle [in degrees]
  r50047[4]: Actual EMF in [in %]

  2:
  - The current did not flow through the correct thyristor or the current cusp made a kink upwards.
  
  r50047[0]: Decision criterion (= 2)
  r50047[1]: Subcriterion
  For subcriterion = 1, the following applies:
  - The current did not flow through the correct thyristors.
  
  r50047[2]: Actual la sample value [in A]
  r50047[3]: Actual la sample value CT 1 [in A]
  r50047[4]: Actual la sample value CT 2 [in A]
  r50047[5]: Actual la sample value + 20% of In [in A]
  r50047[6]: Number of la sample values since the last firing pulse
4 Faults and alarms

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For subcriterion = 2 , the following applies:
The current cusp has an upwards kink
- r50047[2]: Actual Delta Ia [in A]
- r50047[3]: Lowest Delta Ia up until now since the last firing pulse [in A]
- r50047[4]: Actual Ia sample value [in A]
- r50047[5]: First Delta Ia after the last firing pulse [in A]
- r50047[6]: Actual armature firing angle [in degrees]
- r50047[7]: Number of Ia sample values since the last firing pulse

3:
The magnitude of the current cusp was greater than 290% of the actual rated device armature DC current (r50072[1]).
- r50047[0]: Decision criterion (= 3)
- r50047[1]: Number of Delta-Ua, that Ua may still be away from the EMF
- r50047[2]: Previous voltage CD [in V]
- r50047[3]: Actual voltage CD [in V]
- r50047[4]: Actual Delta Ua [in V]
- r50047[5]: Actual armature firing angle [in degrees]
- r50047[6]: Actual EMF in [in V]
- r50047[7]: Actual Ia sample value [in A]

4:
A SINAMICS DCM connected in parallel has detected a commutation failure or overcurrent.
- r50047[0]: Decision criterion (= 4)

5:
Test command was entered via p51583.
- r50047[0]: Decision criterion (= 5)
- r50047[1]: Actual voltage CD [in V]
- r50047[2]: Actual armature firing angle [in degrees]
- r50047[3]: Actual EMF in [in V]
- r50047[4]: Actual Ia sample value [in A]
- r50047[5]: Actual torque direction (0, 1 or 2)

Remedy:
Acknowledge the fault and switch off /switch on the drive

<table>
<thead>
<tr>
<th>F60320 (N, A)</th>
<th>CCP not functional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Message value:</td>
<td>%1</td>
</tr>
<tr>
<td>Message class:</td>
<td>General drive fault (19)</td>
</tr>
<tr>
<td>Drive object:</td>
<td>DC_CTRL</td>
</tr>
<tr>
<td>Reaction:</td>
<td>OFF2 (NONE, OFF1, OFF3)</td>
</tr>
<tr>
<td>Acknowledge:</td>
<td>IMMEDIATELY</td>
</tr>
<tr>
<td>Cause:</td>
<td>The SIMOREG CCP is not functional. Possible fault causes:</td>
</tr>
</tbody>
</table>
- Hardware defect in the charge circuit of the turn-off capacitors.  
- Fuse failure in the armature circuit, line side or motor side.  
- Fuse failure in the pre-charging circuit for the chopper capacitors.  
- Chopper resistors still cooling down (this is necessary)  
Fault value (r0949, interpret decimal):
1: No voltage at the U, V, W connections of the SIMOREG CCP.  
2: The voltage at C-D at the SIMOREG CCP does not match the voltage C-D at the SINAMICS DCM.  
3: The turn-off capacitors of the SIMOREG CCP have not reached the setpoint voltage.  
4: No connection between SINAMICS DCM (X165_2, fast pulse inhibit interface) and SIMOREG CCP (X165).  
5: No connection between SINAMICS DCM (X177) and SIMOREG CCP (X172) via the serial interface.  
6: No connection between several SIMOREG CCPs (X29_PAR or X30_PAR, turn-off pulse interface).  
7: SIMOREG CCP data invalid or not available (r51570, r51571, r51572).  
11: The I2t value (r51575) of the voltage limiting chopper 1 is too high (> 100 %).  
12: The I2t value (r51576) of the voltage limiting chopper 2 is too high (> 100 %).  
20: The chopper capacitors were not able to be pre-charged within the time set in p50089.
4 Faults and alarms

4.2 List of faults and alarms

Note:
- r50047[0]: Fault value
- r50047[1]: CCP state (extended status word + r51574)
- r50047[2]: Armature voltage

Remedy: Interpret the fault value and rectify the fault correspondingly.

Reaction upon N: NONE
Acknowl. upon N: NONE
Reaction upon A: NONE
Acknowl. upon A: NONE

A60321 (F, N) CCP not functional

Message value: %1
Message class: General drive fault (19)
Drive object: DC_CTRL
Reaction: NONE
Acknowledge: NONE
Cause: The SIMOREG CCP is not functional.

Possible fault causes:
- Hardware defect in the charge circuit of the turn-off capacitors.
- Fuse failure in the armature circuit, line side or motor side.
- Fuse failure in the pre-charging circuit for the chopper capacitors.
- Chopper resistors still cooling down (this is necessary)

Alarm value (r2124, interpret decimal):
1: No voltage at the U, V, W connections of the SIMOREG CCP.
2: The voltage at C-D at the SIMOREG CCP does not match the voltage C-D at the SINAMICS DCM.
3: The turn-off capacitors of the SIMOREG CCP have not reached the setpoint voltage.
4: No connection between SINAMICS DCM (X165_2, fast pulse inhibit interface) and SIMOREG CCP (X165).
5: No connection between SINAMICS DCM (X177) and SIMOREG CCP (X172) via the serial interface.
6: No connection between several SIMOREG CCPs (X29_PAR or X30_PAR, turn-off pulse interface).
7: SIMOREG CCP data invalid or not available (r51570, r51571, r51572).
11: The I2t value (r51575) of the voltage limiting chopper 1 is too high (> 100 %).
12: The I2t value (r51576) of the voltage limiting chopper 2 is too high (> 100 %).
20: The chopper capacitors were not able to be pre-charged within the time set in p50089.

Note:
- r50047[0]: Alarm value
- r50047[1]: CCP state (extended status word + r51574)
- r50047[2]: Armature voltage

Remedy: Interpret the fault value and rectify the fault correspondingly.

Reaction upon F: NONE
Acknowl. upon F: IMMEDIATELY
Reaction upon N: NONE
Acknowl. upon N: NONE
4 Faults and alarms

4.2 List of faults and alarms
## Appendix

### Content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>A.1 ASCII table (characters that can be displayed)</td>
<td>1180</td>
</tr>
<tr>
<td>A.2 List of abbreviations</td>
<td>1183</td>
</tr>
</tbody>
</table>
A Appendix
A.1 ASCII table (characters that can be displayed)

The following table includes the decimal and hexadecimal notation of ASCII characters that can be displayed (printable).

<table>
<thead>
<tr>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>20</td>
<td></td>
<td>Space</td>
</tr>
<tr>
<td>!</td>
<td>33</td>
<td>21</td>
<td>Exclamation mark</td>
</tr>
<tr>
<td>*</td>
<td>34</td>
<td>22</td>
<td>Quotation mark</td>
</tr>
<tr>
<td>#</td>
<td>35</td>
<td>23</td>
<td>Number sign</td>
</tr>
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<td>$</td>
<td>36</td>
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<td>Dollar</td>
</tr>
<tr>
<td>%</td>
<td>37</td>
<td>25</td>
<td>Percent</td>
</tr>
<tr>
<td>&amp;</td>
<td>38</td>
<td>26</td>
<td>Ampersand</td>
</tr>
<tr>
<td>‘</td>
<td>39</td>
<td>27</td>
<td>Apostrophe, closing single quotation mark</td>
</tr>
<tr>
<td>(</td>
<td>40</td>
<td>28</td>
<td>Opening parenthesis</td>
</tr>
<tr>
<td>)</td>
<td>41</td>
<td>29</td>
<td>Closing parenthesis</td>
</tr>
<tr>
<td>*</td>
<td>42</td>
<td>2A</td>
<td>Asterisk</td>
</tr>
<tr>
<td>+</td>
<td>43</td>
<td>2B</td>
<td>Plus</td>
</tr>
<tr>
<td>,</td>
<td>44</td>
<td>2C</td>
<td>Comma</td>
</tr>
<tr>
<td>-</td>
<td>45</td>
<td>2D</td>
<td>Hyphen, minus</td>
</tr>
<tr>
<td>.</td>
<td>46</td>
<td>2E</td>
<td>Period, decimal point</td>
</tr>
<tr>
<td>/</td>
<td>47</td>
<td>2F</td>
<td>Slash, slant</td>
</tr>
<tr>
<td>0</td>
<td>48</td>
<td>30</td>
<td>Digit 0</td>
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</tr>
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<td>59</td>
<td>3B</td>
<td>Semicolon</td>
</tr>
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<td>&lt;</td>
<td>60</td>
<td>3C</td>
<td>Less than</td>
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<td>=</td>
<td>61</td>
<td>3D</td>
<td>Equals</td>
</tr>
<tr>
<td>&gt;</td>
<td>62</td>
<td>3E</td>
<td>Greater than</td>
</tr>
<tr>
<td>?</td>
<td>63</td>
<td>3F</td>
<td>Question mark</td>
</tr>
<tr>
<td>@</td>
<td>64</td>
<td>40</td>
<td>Commercial At</td>
</tr>
</tbody>
</table>
## ASCII table (characters that can be displayed), continued

<table>
<thead>
<tr>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>65</td>
<td>41</td>
<td>Capital letter A</td>
</tr>
<tr>
<td>B</td>
<td>66</td>
<td>42</td>
<td>Capital letter B</td>
</tr>
<tr>
<td>C</td>
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<td>D</td>
<td>68</td>
<td>44</td>
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</tr>
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<td>I</td>
<td>73</td>
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</tr>
<tr>
<td>J</td>
<td>74</td>
<td>4A</td>
<td>Capital letter J</td>
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</tr>
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<td>85</td>
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<tr>
<td>V</td>
<td>86</td>
<td>56</td>
<td>Capital letter V</td>
</tr>
<tr>
<td>W</td>
<td>87</td>
<td>57</td>
<td>Capital letter W</td>
</tr>
<tr>
<td>X</td>
<td>88</td>
<td>58</td>
<td>Capital letter X</td>
</tr>
<tr>
<td>Y</td>
<td>89</td>
<td>59</td>
<td>Capital letter Y</td>
</tr>
<tr>
<td>Z</td>
<td>90</td>
<td>5A</td>
<td>Capital letter Z</td>
</tr>
<tr>
<td>[</td>
<td>91</td>
<td>5B</td>
<td>Opening bracket</td>
</tr>
<tr>
<td>\</td>
<td>92</td>
<td>5C</td>
<td>Backslash</td>
</tr>
<tr>
<td>]</td>
<td>93</td>
<td>5D</td>
<td>Closing bracket</td>
</tr>
<tr>
<td>^</td>
<td>94</td>
<td>5E</td>
<td>Circumflex</td>
</tr>
<tr>
<td>_</td>
<td>95</td>
<td>5F</td>
<td>Underline</td>
</tr>
<tr>
<td>`</td>
<td>96</td>
<td>60</td>
<td>Opening single quotation mark</td>
</tr>
<tr>
<td>a</td>
<td>97</td>
<td>61</td>
<td>Small letter a</td>
</tr>
<tr>
<td>b</td>
<td>98</td>
<td>62</td>
<td>Small letter b</td>
</tr>
<tr>
<td>c</td>
<td>99</td>
<td>63</td>
<td>Small letter c</td>
</tr>
<tr>
<td>d</td>
<td>100</td>
<td>64</td>
<td>Small letter d</td>
</tr>
</tbody>
</table>
## A.1 ASCII table (characters that can be displayed)

Table A-1  ASCII table (characters that can be displayed), continued

<table>
<thead>
<tr>
<th>Character</th>
<th>Decimal</th>
<th>Hexadecimal</th>
<th>Meaning</th>
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<tbody>
<tr>
<td>e</td>
<td>101</td>
<td>65</td>
<td>Small letter e</td>
</tr>
<tr>
<td>f</td>
<td>102</td>
<td>66</td>
<td>Small letter f</td>
</tr>
<tr>
<td>g</td>
<td>103</td>
<td>67</td>
<td>Small letter g</td>
</tr>
<tr>
<td>h</td>
<td>104</td>
<td>68</td>
<td>Small letter h</td>
</tr>
<tr>
<td>i</td>
<td>105</td>
<td>69</td>
<td>Small letter i</td>
</tr>
<tr>
<td>j</td>
<td>106</td>
<td>6A</td>
<td>Small letter j</td>
</tr>
<tr>
<td>k</td>
<td>107</td>
<td>6B</td>
<td>Small letter k</td>
</tr>
<tr>
<td>l</td>
<td>108</td>
<td>6C</td>
<td>Small letter l</td>
</tr>
<tr>
<td>m</td>
<td>109</td>
<td>6D</td>
<td>Small letter m</td>
</tr>
<tr>
<td>n</td>
<td>110</td>
<td>6E</td>
<td>Small letter n</td>
</tr>
<tr>
<td>o</td>
<td>111</td>
<td>6F</td>
<td>Small letter o</td>
</tr>
<tr>
<td>p</td>
<td>112</td>
<td>70</td>
<td>Small letter p</td>
</tr>
<tr>
<td>q</td>
<td>113</td>
<td>71</td>
<td>Small letter q</td>
</tr>
<tr>
<td>r</td>
<td>114</td>
<td>72</td>
<td>Small letter r</td>
</tr>
<tr>
<td>s</td>
<td>115</td>
<td>73</td>
<td>Small letter s</td>
</tr>
<tr>
<td>t</td>
<td>116</td>
<td>74</td>
<td>Small letter t</td>
</tr>
<tr>
<td>u</td>
<td>117</td>
<td>75</td>
<td>Small letter u</td>
</tr>
<tr>
<td>v</td>
<td>118</td>
<td>76</td>
<td>Small letter v</td>
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<tr>
<td>w</td>
<td>119</td>
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</tr>
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<td>x</td>
<td>120</td>
<td>78</td>
<td>Small letter x</td>
</tr>
<tr>
<td>y</td>
<td>121</td>
<td>79</td>
<td>Small letter y</td>
</tr>
<tr>
<td>z</td>
<td>122</td>
<td>7A</td>
<td>Small letter z</td>
</tr>
<tr>
<td>{</td>
<td>123</td>
<td>7B</td>
<td>Opening brace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>124</td>
<td>7C</td>
</tr>
<tr>
<td>)</td>
<td>125</td>
<td>7D</td>
<td>Closing brace</td>
</tr>
<tr>
<td>~</td>
<td>126</td>
<td>7E</td>
<td>Tilde</td>
</tr>
</tbody>
</table>
### A.2 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>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>A…</td>
<td>Alarm</td>
<td>Warning</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 coding standard for the exchange of information</td>
</tr>
<tr>
<td>AS-i</td>
<td>AS-Interface (Actuator Sensor Interface)</td>
<td>AS interface (open bus system in automation technology)</td>
</tr>
<tr>
<td>ASM</td>
<td>Asynchronomotor</td>
<td>Induction motor</td>
</tr>
<tr>
<td>BB</td>
<td>Betriebsbedingung</td>
<td>Operation condition</td>
</tr>
<tr>
<td>BERO</td>
<td>-</td>
<td>Contactless 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 Arbeitssicherheit</td>
<td>BG-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>-</td>
<td>Safety message</td>
</tr>
<tr>
<td>CAN</td>
<td>Controller Area Network</td>
<td>Serial bus system</td>
</tr>
<tr>
<td>CBC</td>
<td>Communication Board CAN</td>
<td>Communication Board CAN</td>
</tr>
<tr>
<td>CBE</td>
<td>Communication Board Ethernet</td>
<td>PROFINET communication module (Ethernet)</td>
</tr>
<tr>
<td>CD</td>
<td>Compact Disc</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 card</td>
</tr>
<tr>
<td>CI</td>
<td>Connector Input</td>
<td>Connector input</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Significance</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>A Appendix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.2 List of abbreviations</td>
<td></td>
<td></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>Computer-supported 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>CoL</td>
<td>Certificate of License</td>
<td>Certificate of License</td>
</tr>
<tr>
<td>COM</td>
<td>Common contact of a changeover relay</td>
<td>Startup contact of a changeover relay</td>
</tr>
<tr>
<td>COMM</td>
<td>Commissioning</td>
<td>Startup</td>
</tr>
<tr>
<td>CP</td>
<td>Communication Processor</td>
<td>Communications 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</td>
<td>Control Unit DC</td>
</tr>
<tr>
<td>DAC</td>
<td>Digital Analog Converter</td>
<td>Digital analog converter</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current</td>
<td>DC 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/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>DMM</td>
<td>Double Motor Module</td>
<td>Double Motor Module</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/O</td>
</tr>
<tr>
<td>DPRAM</td>
<td>Dual-Port Random Access Memory</td>
<td>Dual-Port Random Access Memory</td>
</tr>
<tr>
<td>DQ</td>
<td>DRIVE-CLiQ</td>
<td>DRIVE-CLiQ</td>
</tr>
<tr>
<td>DRAM</td>
<td>Dynamic Random Access Memory</td>
<td>Dynamic Random Access 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>Timer</td>
</tr>
<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>EEPROM</td>
<td>Electrically Erasable Programmable</td>
<td>Electrically Erasable Programmable</td>
</tr>
<tr>
<td></td>
<td>Read-Only Memory</td>
<td>Read-Only-Memory</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Significance</td>
</tr>
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<td>--------------</td>
<td>------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>EGB</td>
<td>Elektrostatisch gefährdete Baugruppen</td>
<td>Electrostatic sensitive devices</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>Electromotive Force</td>
<td>Electromotive force</td>
</tr>
<tr>
<td>EMK</td>
<td>Elektromotorische Kraft</td>
<td>Electromotive force</td>
</tr>
<tr>
<td>EMV</td>
<td>Elektromagnetische Verträglichkeit</td>
<td>Electromagnetic compatibility</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>ESM</td>
<td>Essential Service Mode</td>
<td>Essential service mode</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>FBLOCKS</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>Failsafe Digital Input</td>
<td>Failsafe digital input</td>
</tr>
<tr>
<td>F-DO</td>
<td>Failsafe Digital Output</td>
<td>Fail-safe digital output</td>
</tr>
<tr>
<td>FEPROM</td>
<td>Flash-EPROM</td>
<td>Non-volatile write and read 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>
</tr>
<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 M)</td>
</tr>
<tr>
<td>GSD</td>
<td>Gerätestammdatei</td>
<td>Generic Station Description: Describes the features 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>
</tbody>
</table>
## A.2 List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Source of abbreviation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>High frequency</td>
<td>High frequency</td>
</tr>
<tr>
<td>HF</td>
<td>Hochfrequenzdrossel</td>
<td>Radio frequency reactor</td>
</tr>
<tr>
<td>HLA</td>
<td>Hydraulic Linear Actuator</td>
<td>Hydraulic linear actuator</td>
</tr>
<tr>
<td>HLG</td>
<td>Hochlaufgeber</td>
<td>Ramp-function Generator</td>
</tr>
<tr>
<td>HM</td>
<td>Hydraulic Module</td>
<td>Hydraulic Module</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 high interference threshold</td>
</tr>
<tr>
<td>HW</td>
<td>Hardware</td>
<td>Hardware</td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. V.</td>
<td>In Vorbereitung</td>
<td>Under development: This property is currently not 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>Startup</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 power switch 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 Terre</td>
<td>Non-grounded three-phase line supply</td>
</tr>
<tr>
<td>IVP</td>
<td>Internal Voltage Protection</td>
<td>Internal voltage protection</td>
</tr>
<tr>
<td>J</td>
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<td></td>
</tr>
<tr>
<td>JOG</td>
<td>Jogging</td>
<td>Jogging</td>
</tr>
<tr>
<td>K</td>
<td></td>
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</tr>
<tr>
<td>KDV</td>
<td>Kreuzweiser Datenvergleich</td>
<td>Data cross-check</td>
</tr>
<tr>
<td>KHP</td>
<td>Know-how protection</td>
<td>Know-how protection</td>
</tr>
<tr>
<td>KIP</td>
<td>Kinetische Pufferung</td>
<td>Kinetic buffering</td>
</tr>
<tr>
<td>Kp</td>
<td>-</td>
<td>Proportional gain</td>
</tr>
<tr>
<td>KTY</td>
<td>-</td>
<td>Special temperature sensor</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>-</td>
<td>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>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>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Significance</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>--------------</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>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>MM</td>
<td>Motor Module</td>
<td>Motor Module</td>
</tr>
<tr>
<td>MMC</td>
<td>Man-Machine Communication</td>
<td>Man-machine communication</td>
</tr>
<tr>
<td>MMC</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>N. C.</td>
<td>Not connected</td>
</tr>
<tr>
<td>N...</td>
<td>No Report</td>
<td>No report 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 contacts</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 association in 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 contacts</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>Software component (technology package) which provides additional functions for the SINAMICS drive system</td>
</tr>
<tr>
<td>OAIF</td>
<td>Open Architecture Interface</td>
<td>Version of the SINAMICS firmware as of which the OA-application can be used</td>
</tr>
<tr>
<td>OASP</td>
<td>Open Architecture Support Package</td>
<td>Expands the STARTER commissioning tool by the corresponding OA-application</td>
</tr>
<tr>
<td>OC</td>
<td>Operating Condition</td>
<td>Operation condition</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
<td>Original equipment manufacturer</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Significance</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>OLP</td>
<td>Optical Link Plug</td>
<td>Bus connector for fiber-optic cable</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 parameters</td>
</tr>
<tr>
<td>p…</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>P1</td>
<td>Processor 1</td>
<td>CPU 1</td>
</tr>
<tr>
<td>P2</td>
<td>Processor 2</td>
<td>CPU 2</td>
</tr>
<tr>
<td>PB</td>
<td>PROFIBUS</td>
<td>PROFIBUS</td>
</tr>
<tr>
<td>PcCtrl</td>
<td>PC Control</td>
<td>Master control</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 ground</td>
</tr>
<tr>
<td>PELV</td>
<td>Protective Extra Low Voltage</td>
<td>Safety extra-low voltage</td>
</tr>
<tr>
<td>PFH</td>
<td>Probability of dangerous failure per hour</td>
<td>Probability of dangerous failure per hour</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 Logical 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>PM</td>
<td>Power Module</td>
<td>Power Module</td>
</tr>
<tr>
<td>PMSM</td>
<td>Permanent-magnet synchronous motor</td>
<td>Permanent-magnet synchronous motor</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>Q R</td>
<td></td>
<td>Display parameters (read only)</td>
</tr>
<tr>
<td>RAM</td>
<td>Random Access Memory</td>
<td>Speicher zum Lesen und Schreiben</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>REL</td>
<td>Reluctance motor textile</td>
<td>Reluctance motor textile</td>
</tr>
<tr>
<td>RESM</td>
<td>Reluctance synchronous motor</td>
<td>Synchronous reluctance motor</td>
</tr>
<tr>
<td>RFG</td>
<td>Ramp-Function Generator</td>
<td>Ramp-function Generator</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Source of abbreviation</td>
<td>Significance</td>
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</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>
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<tr>
<td>RKA</td>
<td>Rückkühlanlage</td>
<td>Cooling unit</td>
</tr>
<tr>
<td>RLM</td>
<td>Renewable Line Module</td>
<td>Renewable Line Module</td>
</tr>
<tr>
<td>RO</td>
<td>Read Only</td>
<td>Read only</td>
</tr>
<tr>
<td>ROM</td>
<td>Read-Only Memory</td>
<td>Read-only memory</td>
</tr>
<tr>
<td>RPDO</td>
<td>Receive Process Data Object</td>
<td>Interface standard for a cable-connected serial data transmission between a sender and receiver (also known as EIA232)</td>
</tr>
<tr>
<td>RS232</td>
<td>Recommended Standard 232</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>RS485</td>
<td>Recommended Standard 485</td>
<td>Real-time clock</td>
</tr>
<tr>
<td>RTC</td>
<td>Real Time Clock</td>
<td>Real-time clock</td>
</tr>
<tr>
<td>RZA</td>
<td>Raumzeigerapproximation</td>
<td>Space-vector approximation</td>
</tr>
<tr>
<td>S1</td>
<td>-</td>
<td>Continuous operation</td>
</tr>
<tr>
<td>S3</td>
<td>-</td>
<td>Intermittent duty</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>Sicherer 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>SBT</td>
<td>Safe Brake Test</td>
<td>Safe brake test</td>
</tr>
<tr>
<td>SCA</td>
<td>Safe Cam</td>
<td>Safe cam</td>
</tr>
<tr>
<td>SD Card</td>
<td>SecureDigital 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>SESM</td>
<td>Separately-excited synchronous motor</td>
<td>Separately excited synchronous motor</td>
</tr>
<tr>
<td>SG</td>
<td>Sicher reduzierte Geschwindigkeit</td>
<td>Safety-limited 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 stop</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>Sensorless vector control</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>
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</table>
## A.2 List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Source of abbreviation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMM</td>
<td>Single Motor Module</td>
<td>Single Motor Module</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>SP</td>
<td>Safe Position</td>
<td>Safe position</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 peripheral interface</td>
</tr>
<tr>
<td>SPS</td>
<td>Speicherprogrammierbare Steuerung</td>
<td>Programmable logic controller</td>
</tr>
<tr>
<td>SS1</td>
<td>Safe Stop 1</td>
<td>Safe Stop 1 (monitored for time and ramp)</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>
</tr>
<tr>
<td>STO</td>
<td>Safe Torque Off</td>
<td>Safe torque off</td>
</tr>
<tr>
<td>STW</td>
<td>Steuerwort</td>
<td>Control word</td>
</tr>
<tr>
<td>T</td>
<td>Terminal Board</td>
<td>Terminal Board</td>
</tr>
<tr>
<td>TIA</td>
<td>Totally Integrated Automation</td>
<td>Totally Integrated Automation</td>
</tr>
<tr>
<td>TM</td>
<td>Terminal Module</td>
<td>Terminal module</td>
</tr>
<tr>
<td>TN</td>
<td>Terre Neutre</td>
<td>Grounded three-phase line supply</td>
</tr>
<tr>
<td>Tn</td>
<td>-</td>
<td>Integral time</td>
</tr>
<tr>
<td>TPDO</td>
<td>Transmit Process Data Object</td>
<td>Transmit Process Data Object</td>
</tr>
<tr>
<td>TT</td>
<td>Terre Terre</td>
<td>Grounded three-phase line supply</td>
</tr>
<tr>
<td>TTL</td>
<td>Transistor-Transistor-Logik</td>
<td>Transistor-Transistor-Logik</td>
</tr>
<tr>
<td>Tv</td>
<td>-</td>
<td>Rate time</td>
</tr>
<tr>
<td>UL</td>
<td>Underwriters Laboratories Inc.</td>
<td>Underwriters Laboratories Inc.</td>
</tr>
<tr>
<td>UPS</td>
<td>Uninterruptible Power Supply</td>
<td>Uninterruptible power supply</td>
</tr>
<tr>
<td>USV</td>
<td>Unterbrechungsfreie Stromversorgung</td>
<td>Uninterruptible power supply</td>
</tr>
<tr>
<td>UTC</td>
<td>Universal Time Coordinated</td>
<td>Universal time coordinated</td>
</tr>
<tr>
<td>V</td>
<td>Vector Control</td>
<td>Vector control</td>
</tr>
<tr>
<td>Vdc</td>
<td>-</td>
<td>DC-link voltage</td>
</tr>
<tr>
<td>VdcN</td>
<td>-</td>
<td>Partial DC-link voltage negative</td>
</tr>
<tr>
<td>VdcP</td>
<td>-</td>
<td>Partial DC-link voltage positive</td>
</tr>
<tr>
<td>VDE</td>
<td>Verband Deutscher Elektrotechniker</td>
<td>Verband Deutscher Elektrotechniker [Association of German Electrical Engineers]</td>
</tr>
<tr>
<td>VDI</td>
<td>Verein Deutscher Ingenieure</td>
<td>Verein Deutscher Ingenieure [Association of German Engineers]</td>
</tr>
<tr>
<td>VPM</td>
<td>Voltage Protection Module</td>
<td>Voltage Protection Module</td>
</tr>
<tr>
<td>Vpp</td>
<td>Volt peak to peak</td>
<td>Volt peak to peak</td>
</tr>
<tr>
<td>VSM</td>
<td>Voltage Sensing Module</td>
<td>Voltage Sensing Module</td>
</tr>
</tbody>
</table>
## A.2 List of abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Source of abbreviation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Wiedereinschaltautomatik</td>
<td>Automatic restart</td>
</tr>
<tr>
<td>WEA</td>
<td>Werkzeugmaschine</td>
<td>Machine tool</td>
</tr>
<tr>
<td>X</td>
<td>XML</td>
<td>Extensible markup language (standard language for Web publishing and document management)</td>
</tr>
<tr>
<td>XML</td>
<td>Extensible Markup Language</td>
<td></td>
</tr>
<tr>
<td>Y</td>
<td></td>
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</tr>
<tr>
<td>Z</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZK</td>
<td>Zwischenkreis</td>
<td>DC link</td>
</tr>
<tr>
<td>ZM</td>
<td>Zero Mark</td>
<td>Zero mark</td>
</tr>
<tr>
<td>ZSW</td>
<td>Zustandswort</td>
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